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PRESENT STATUS OF CYCLOPROPANE*

BY

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Several reports have been published[1 2 3 4 5 6 7 8 9] covering the past studies of cyclopropane at the University of Wisconsin. It is not the purpose of the present communication to repeat what has already been published, but rather to describe further experiences, experimental and clinical, which may serve to bring up to date what is now known about this agent.

Physical and Chemical Properties

The solubilities reported by Henderson and Lucas in 1929[10] were determined upon specimens of gas known to be impure. The solubility of present market samples at 37.5° C. per c.cm. of fluid has been determined by Orcutt[11] as follows: 1 c.cm. of water dissolves 0.204 c.cm., 1 c.cm. of oil dissolves 6.99 c.cm., and 1 c.cm. of human blood dissolves 0.457 c.cm. of cyclopropane. These figures give an oil-water ratio of 34.3. The figures compared with those for older agents, methods of determination, and comment of the physiological chemist will be found in his report when it is published.

A method of manufacture by what has been referred to as the "chloride process" has been patented by the Purdue University Research Foundation. Since such a method promises a reduction of cost of clinical supplies the successful production under this process is awaited with interest but with some trepidation. Past experience with other new agents leads to the fear that new methods, and the employment of chemists inexperienced in production, may result in dangerous impurities. There are already several manufacturers producing cyclopropane in the United States by the method suggested by Freund.[12] Differences in such physical properties as odour are already leading to speculation as to the possibility of the presence of toxic chemical impurities. For the protection of the careful manufacturer, as well as the patient, a reliable and authoritative chemical analysis of market samples should be available in each country. When dealing with a new and experimental therapeutic agent it is extremely important that the drug in its purest state be available.

An early report from our laboratories[1] contained erroneous figures of the explosive range of mixtures of cyclopropane and oxygen. This error in publication is regretted in the interest of scientific accuracy, although we deny the clinical importance of such knowledge. Effective concentrations of any hydrocarbon used for anaesthesia vary widely. The more dilute concentrations outside the respiratory apparatus are quite as likely to come in contact with sources of ignition as are those in the respiratory tract. Concerning the fire hazard from anaesthetic agents in general, the policy seems safe to look upon ether, ethylene, and cyclopropane as always a potential source of danger. If one remembers that ethylene is slightly lighter than air, whereas ether vapour is some two and a half times as heavy, and cyclopropane one and a half times as heavy as air, one may then intelligently guard against contact of explosive mixtures with sources of flame or spark. We believe the completely closed carbon dioxide absorption technique to be the greatest safeguard against this danger.

Pharmacology

Effective Concentration.—Seevers and Bennett during the past year have conducted a comparative study of the analgesic properties of cyclopropane, nitrous oxide, and ethylene in normal subjects. They found that concentrations of cyclopropane ranging from 1½ to 4 per cent. definitely depressed or abolished sensory stimuli from skin and mucous membranes without interfering with consciousness or volition. On the basis of their findings we have instituted a clinical comparison of the usefulness of cyclopropane and nitrous oxide analgesia during labour.

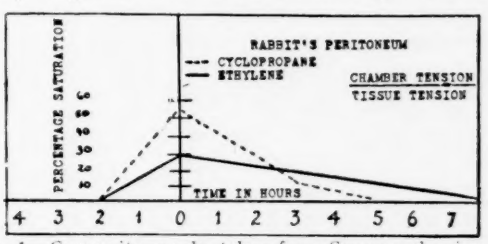

FIG. 1.—Composite graph, taken from Seevers, showing comparative rates of saturation and desaturation of tissues (peritoneal cavity).

The previously reported figures[4] for effective mask concentrations in surgical anaesthesia gave averages of 7.4 per cent. for light surgical anaesthesia, advancing through 13.1 per cent. for second plane, and 23.3 per cent. for third plane, an average of 42.9 per cent. being found necessary to cause respiratory arrest. It will be remembered, however, that the maximum and minimum concentrations found in the mask during each plane of anaesthesia varied widely from these averages. Subsequent work sheds some light on the subject. Seevers *et al.*[5] studied the rate of saturation and desaturation of animals with ethylene and cyclopropane by means of tissue gas depots, the technique being based on that described by Argyll Campbell. Fig. 1 is a rough graph based on two of theirs, plotting the relative saturation of the rabbit's peritoneal cavity (chamber tension divided by peritoneal tension) during two hours in a chamber containing an anaesthetic concentration of the gases. The

* Read in opening a discussion in the Section of Pharmacology and Therapeutics with Anaesthetics at the Annual Meeting of the British Medical Association, Oxford, 1936.

relative rate of desaturation is also shown. The diffusibility of cyclopropane through rubber has been shown,[4] and diffusion through skin similar to that of nitrous oxide[13] may occur. These findings indicate that the constant reduction of gas tension during anaesthesia, due to escape from the blood, and varying in rate with changes in circulation to the various parts of the body, may offer partial explanation of the widely variant effective concentration necessary in the mask to produce a given degree of narcosis. If induction were made by very gradually and slowly increasing the cyclopropane concentration in the anaesthetic atmosphere, allowing time for at least a partial equilibrium to become established between alveoli, blood, and tissues, doubtless the wide variation in maximum and minimum effective concentrations for the different degrees of narcosis found previously might be minimized. Probably much lower averages would be found. Further reference will be made to the matter in the following discussion of effects on respiration.

It is interesting that Burford recently reported before the American Society of Anesthetists a technique for cyclopropane administration agreeing with this reasoning. He recommends that just sufficient concentration of gas be added at the beginning of induction to ensure unconsciousness, after which the flow is reduced to between 10 and 100 c.cm. per minute, with the hope of balancing the loss to body tissues until an approximate equilibrium is built up in a gradual manner between blood and tissues. Clinical experience has taught that the temptation to use higher concentrations than are necessary is very difficult to resist. The abundant oxygen possible in the anaesthetic atmosphere gives the average anaesthetist a feeling of confidence and at the same time of impatience at waiting for the effect he desires. The irritant property of ether vapour prevents a similar mistake being made with that agent. Extremely rapid induction with dangerously high concentrations is impossible. Cyclopropane is practically devoid of irritation.

Respiration

It is evident to the casual observer that cyclopropane does not cause the early stimulation of respiration seen when nitrous oxide, ethylene, or ether is inhaled.

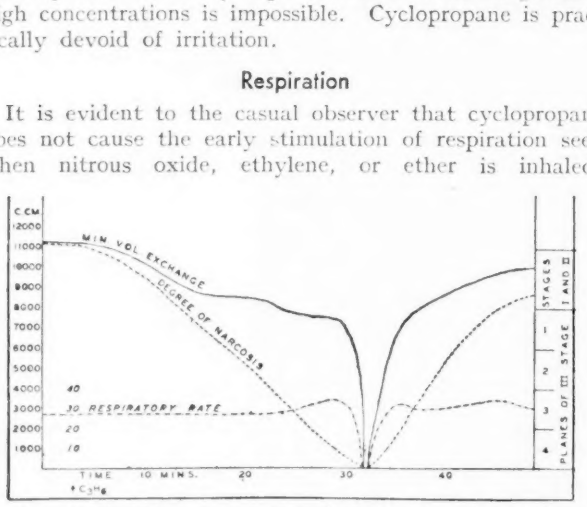

FIG. 2.—Graphic representation of changes in minute-volume respiratory exchange, depth of anaesthesia and respiratory rate during slow and gradual induction with cyclopropane to the point of respiratory arrest.

Whether an actual reduction in minute-volume respiratory exchange takes place during induction and light surgical anaesthesia has been in dispute. In order to secure more definite evidence we have induced anaesthesia with various agents in the following manner. A tight-fitting face mask, with a minimum of dead space, was fitted directly to a soda-lime canister and these to a water spirometer arranged to trace respiratory excursions on a revolving drum from which respiratory rate and tidal volume could be measured and minute-volume exchange calculated.

In Fig. 2 are shown graphically the measurements taken from such a record of cyclopropane anaesthesia.

A woman, 36 years of age, weight 105 lb. (48 kilograms) had been given paraldehyde, 1 oz., and scopolamine, 1/15 grain (0.0004 gram), one and a half hours before anaesthesia. Four thousand cubic centimetres of oxygen were run into the spirometer before connecting it to the soda-lime canister and mask in air-tight contact with the patient's face. Oxygen added at the rate of 150 c.cm. per minute replaced that used by the patient in metabolism. After four minutes the flow of oxygen was stopped and exactly the same rate of flow of cyclopropane begun; thus anaesthesia progressed slowly through the various stages and planes, reaching the point of respiratory arrest in twenty-eight minutes. At this point 900 c.cm. of oxygen was run into the spirometer and the flow of cyclopropane stopped. Within thirty seconds respiration was resumed spontaneously.

It will be observed that a return through the various planes of third-stage anaesthesia took place in approximately one-half the time required to reach respiratory arrest after cyclopropane was started. One may assume that a portion of the gas in the blood at the time of respiratory arrest was, during the ten minutes following respiratory arrest, rapidly diffusing into the tissues and cavities of the body.

It will be noted that no increase in either rate or tidal volume of respiration occurred after cyclopropane flow was begun, but rather a very gradual decrease in depth, but not in rate until the fourth plane was reached with intercostal paralysis. At this point a period of increased rate began, insufficient in depth to maintain efficient exchange. We may conclude from this experiment and others like it that cyclopropane as a rule causes no respiratory stimulation even during induction, that there is a slight depression during the first and second planes of surgical anaesthesia and that, if increasing dosage is gradual, very slight respiratory depression occurs until a concentration is reached that will shortly result in respiratory arrest. If we could always effect a very slow gradual induction, avoiding high concentrations at any time, a more complete stabilization of tensions in various parts of the body would result. The added safety is manifest. A concentration which will arrest respiration quickly (within three to five minutes) may be extremely toxic to the heart.

Circulation

The Heart.—It is important *to watch carefully and continuously the peripheral pulse* when there is marked respiratory depression during cyclopropane anaesthesia. Previous publications[2 4 8] have called attention to the occasional recording of ventricular tachycardia in electrocardiographic tracings taken during cyclopropane anaesthesia in both animals and clinical patients. Since a ventricular tachycardia has been recognized as occurring previous to ventricular fibrillation from whatever cause, cardiac studies have continued. Clinical interest has been focused on arrhythmia as noted by pulse palpation. In Table I the percentage incidence of arrhythmia observed in clinical cases during operation with cyclopropane and with ether is listed in order of occurrence in the

TABLE I.—*Cases with Arrhythmia during Operation according to Plane of Anaesthesia, 1935*

Plane	C_3H_6			Ether		
	Cases	No.	Per cent.	Cases	No.	Per cent.
I	635	13	2.22	31	2	6.45
II	1,263	72	5.70	275	7	2.54
III	471	37	7.86	305	8	2.62
IV	298	38	12.72	115	2	1.74
Total ...	2,667			726		

four planes of anaesthesia. It will be noted that incidence of palpable arrhythmia with cyclopropane increases with depth of anaesthesia, whereas with ether the incidence decreases as narcosis becomes more profound.

The experimental work of Levy[14] showed that under *light* anaesthesia with chloroform animals became much more sensitive to certain sensory stimuli and to non-fatal doses of epinephrine. Ventricular fibrillation could be quite regularly produced by such means but always under light chloroform, never when the anaesthesia was profound. Meek, in collaboration with our department, has administered non-fatal doses of epinephrine intravenously (0.01 mg. per kilogram) to dogs under both light and deep cyclopropane narcosis. Ventricular tachycardia has frequently resulted. Ventricular fibrillation has not been observed unless the animal was in respiratory arrest, and then on one occasion only. This work is being continued to include other of the commonly used agents. At present we can only say that doses of intravenous epinephrine which frequently precipitate ventricular fibrillation in dogs during light chloroform fail to do so under light cyclopropane. However, under very deep cyclopropane with high concentrations and respiratory arrest, epinephrine has caused ventricular fibrillation.

During over 7,200 clinical administrations of cyclopropane at the Wisconsin General Hospital three patients have died. The condition of the patient before anaesthesia accounted for one of these fatalities, circulatory depression before anaesthesia being sufficient to make a blood pressure reading impossible. The other two were credited at the time to technical errors in administration. Analysed in the light of more recent experimental evidence, however, these deaths may have been caused by ventricular fibrillation. High concentrations of the gas were administered for induction in each case. A closed mask and bag was used, allowing rebreathing without carbon dioxide absorption. Depth of anaesthesia progressed rapidly to marked respiratory depression before intubation. After intubation in each case no respiration was present and no pulse could be palpated. Intracardiac epinephrine was used in one case and the other was subjected to extreme psychic shock before induction, with possible resultant excess secretion of epinephrine. These cases will be reported in detail later. It seems possible that these two cases may illustrate the clinical parallel of the one animal in Meek's series in which ventricular fibrillation was precipitated by intravenous epinephrine administered during extremely profound cyclopropane anaesthesia. Further study of the mechanism of cardiac damage is indicated and will be continued.

Comment.—From the experimental and clinical evidence available at this time we may say that in normal individuals (animal or man) cardiac damage is not likely to precede respiratory arrest if extremely rapid induction with high concentrations is avoided. A safe reaction includes a moderate decrease in pulse rate. Beyond this, if cardiac damage is occurring, the sequence of events is probably as follows: first, a further slowing of the pulse from 60 to 50 or below; then either an arrhythmia or a tachycardia (ventricular) may occur, presumably to be followed by ventricular fibrillation. If it is not the anaesthetist's custom to follow the pulse with constant palpation at least he should do so throughout any period of extreme depression of respiration under deep cyclopropane anaesthesia. *The instant extreme bradycardia, arrhythmia, or tachycardia appears the concentration should be markedly reduced* at once. Present knowledge would point to the inadvisability of rapid inductions, the use of high carbon dioxide tensions, and the administration of epinephrine as a resuscitative measure.

Blood Pressure.—For the belief that cyclopropane raises blood pressure we can find no clinical or experimental evidence. Blood pressure is occasionally seen to rise after induction of anaesthesia, but never have we failed to explain the rise on other grounds than drug action. The common causes of rising systolic pressure in anaesthesia are carbon dioxide excess, oxygen want, or respiratory obstruction. Seevers[5] has shown the tissue gas tensions of carbon dioxide to range between 50 and 75 mm. of mercury under cyclopropane anaesthesia (distinctly above normal) and between 35 and 50 under ethylene (normal or below).

My associates Hathaway and Orcutt have studied changes in the gas content of the blood of patients under anaesthesia with several agents. In Fig. 3 are graphically

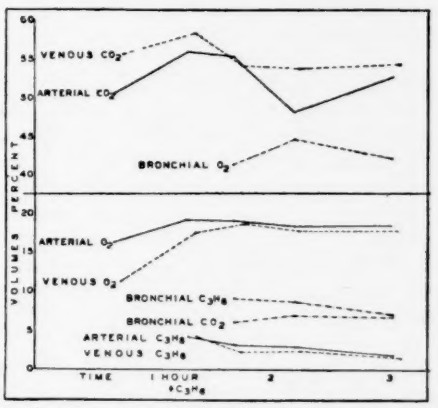

FIG. 3.—Results of analysis of venous and arterial blood and bronchial samples of oxygen, carbon dioxide, and cyclopropane during a cyclopropane administration.

represented analyses of the venous, arterial, and bronchial content found in a patient before and during cyclopropane anaesthesia. Values are expressed in volumes per cent.

The patient was a man weighing 114 lb. (52 kilograms) undergoing a herniorrhaphy. One and a half hours after the administration of morphine 1/6 grain (0.01 gram) and scopolamine 1/150 grain (0.0004 gram), anaesthesia was induced with cyclopropane by means of a closed technique without soda-lime. Narcosis was carried rapidly to the third plane of surgical anaesthesia with extreme depression of respiration.* After intubation, bronchial gas specimens were taken. (A small catheter passed inside the endotracheal airway deep into a bronchus permitted the removal of a small amount of the anaesthetic atmosphere at the height of expiration during several respiratory cycles). Concentration of cyclopropane was probably much higher at the time of intubation than during the taking of bronchial samples later in the anaesthesia. The first set of blood samples were taken before the mask was applied and the second at the deepest plane of anaesthesia during intubation and with marked respiratory depression. Although the depth of anaesthesia was lighter thereafter the third set of samples, including bronchial, were taken during another short period of respiratory depression. The fourth and fifth sets of samples were taken during normal surgical anaesthesia with a respiratory rate of approximately 20 per minute.

The tendency toward a high bronchial and arterial carbon dioxide in the above experiment will be seen. A tendency for venous oxygen to approach the arterial will be noted. Our present view is that this may be the manifestation of an increased peripheral blood flow. A similar result is characteristic of ethylene anaesthesia and is not due to the high oxygen tension in the alveoli, since the same change has been found when cyclopropane was administered by pharyngeal insufflation with air alone as a vehicle. The quiet breathing without exaggeration of minute-volume under cyclopropane permits a small amount of respiratory obstruction to be more easily overlooked. For the same reason the dead space of even the

* The technique of rapid induction without soda-lime here described is no longer considered safe or desirable. Slow, gradual saturation produces safer and more satisfactory anaesthesia.

best face mask available may afford too much rebreathing and a toxic "piling up" of carbon dioxide. Further experimental evidence will be necessary to determine whether reduced minute-volume respiration is the sole cause of high carbon dioxide or whether changes in blood flow or in tissue metabolism may be concerned. The possibility that an extremely high oxygen tension in the anaesthetic atmosphere may result in interference with carbon dioxide elimination must be considered.

Before considering direct drug action to be the cause of a rise of blood pressure under cyclopropane anaesthesia very careful consideration should be given to possible technical faults and particularly to the likelihood of inefficient carbon dioxide control.

Gastro-intestinal

In vitro experiments have been reported from Leake's laboratory,[16] showing stimulation of isolated intestinal muscle by cyclopropane. Meek, at Wisconsin, has studied normal dogs with Thiry and Thiry-Vella intestinal loops. Both circular contraction and propulsion phenomena are inhibited or arrested in deep cyclopropane anaesthesia. Rather prompt return to normal activity was observed after removal of the mask. Six experiments out of fourteen showed a distinct increase over the normal both in propulsion activity and in circular contraction during recovery.

The customary use of opium for post-operative pain in our hospital doubtless has a greater influence on gastro-intestinal morbidity than does the agent used. Of the 10,638 cases analysed in the accompanying tables roughly 3 per cent. of the nitrous oxide, 7 per cent. of the ethylene, 13½ per cent. of the cyclopropane, and 16½ per cent. of the ether cases were followed by sufficient distension to be mentioned and recorded. The latter two agents only were used for abdominal work. The percentage of patients, for each agent, who were nauseated or vomited at least once after leaving the operating room were roughly as follows: nitrous oxide 23 per cent., ethylene 33 per cent., cyclopropane 39 per cent., and ether 56.5 per cent. The average incidence of nausea or vomiting for the 10,638 cases was 40.6 per cent.

Genito-urinary

Cyclopropane has been used for Caesarean section. Uterine activity can be inhibited and, we believe, abolished with deep anaesthesia when necessary. Early recovery of tone in light anaesthesia and following has, in our experience, prevented post-partum haemorrhage. In normal labour we prefer nitrous oxide except for slight additions of cyclopropane late in the second stage or during perineal repair in particularly difficult cases. An investigation of the effect of cyclopropane on kidney function and bladder musculature is planned for the coming year. Clinical experience has not pointed to serious interference with ether function. The records show that either mild or severe urinary retention was recorded in 7.5 per cent. of cyclopropane cases, 5.4 per cent. for ether, 2.1 per cent. for ethylene, and 2.8 per cent. for nitrous oxide. Again, the incidence follows the type of operation, and is probably little influenced by the anaesthetic agent.

Clinical Experience

A comparison of the relative frequency of administration of the various inhalation agents at Wisconsin General Hospital over a three-year period is set down in Table II. The total death rate includes all known fatalities, whether during the hospitalization period or later, whatever the cause. The relative frequency of administration in the three separate years and the totals are shown in Table III. During 1935 a prearranged effort was made to use ether as frequently as possible in order to secure case records of a similar number of ether and cyclopropane administrations. The effort failed.

The relative incidence of post-operative respiratory and circulatory complications, expressed in percentages, is shown in Fig. 4. Total respiratory complications, including cough, pharyngitis, etc., as well as pneumonia, are represented by the unshaded blocks. Major respiratory complications only—namely, pneumonia and atelectasis or massive collapse—are represented by the shaded section.

TABLE II.—*Clinical Use of Cyclopropane, 1933–5*

	Cases	Per cent.
Inhalation anaesthesia	10,638	
CO_2 absorption technique	9,025	84.8
Ethylene		9.5
Nitrous oxide		12.2
Ether...		22.8
Cyclopropane	5,889	55.3
Died within two weeks	222	2.08
Total deaths	355	3.33

TABLE III.—*Total Cases by Agents*

	1933	1934	1935	Total
Cyclopropane	860	2,343	2,686	5,889
Ether	1,165	531	735	2,431
Nitrous oxide	481	476	342	1,299
Ethylene	785	189	43	1,019
Total	3,291	3,539	3,808	10,638

Deaths from respiratory causes are represented in black. Circulatory complications are not separated into major and minor disability, the plain blocks representing total percentages of circulatory abnormalities following operation from simple tachycardia (pulse rate of over 100 after return to the ward) or bradycardia (pulse rate below 60 after return to the ward) to fibrillation, cardiac dilatation, and shock. The black blocks, again, represent deaths from

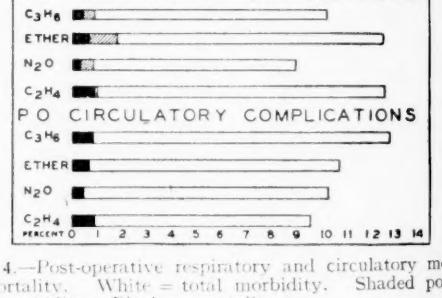

FIG. 4.—Post-operative respiratory and circulatory morbidity and mortality. White = total morbidity. Shaded portion = major morbidity. Black = mortality.

circulatory causes. The other agents used are included with cyclopropane for comparison. While the latter drug has been used for all types of operations, as has ether, for obvious reasons the use of ethylene and nitrous oxide was confined to operative procedures demanding little or no relaxation. Under these circumstances the effect of the operation itself and the condition of the patient is probably a larger factor in resulting morbidity and mortality than is the agent used. For this reason little discussion of these figures seems justified. Records are kept with considerable care by the anaesthesia department personnel. Hollerith punch cards are used for final record and for convenience in sorting and compiling.[15]

There is, however, probable justification in these records for the following statement. Cyclopropane has, in our hands, resulted in no increase in death rate from anaesthesia, as such, over the older agents in common use. It certainly has carried its share of bad risk cases. It has, in our hands, a definitely lower major respiratory morbidity than we have experienced after ether or spinal anaesthesia. Due to the difference in operative procedures for which other agents and methods are used further comparison is difficult.

Conclusion

After six years' experience with cyclopropane in laboratory and operating room we still consider it an experimental drug. There are many things about it which are yet to be learned. At the same time, we feel justified in continuing its clinical use and recommending it to others who are competent to study its effects and recognize its dangers.

The author regrets injustice to several of his associates as well as inconvenience to readers through failure to cite references to published papers in every case. Much of the work here presented in outline has been accomplished during recent months, and is either incomplete or in manuscript only at this time.

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L. B. Ellis and Soma Weiss (*Arch. Neurol. and Psychiat.*, August, 1936, p. 362) have continued the discussion on vasomotor disturbances and oedema associated with cerebral hemiplegia. They have compared the arterio-venous oxygen difference, obtained from measurements of the oxygen tension of blood from an artery and from the ante-cubital and femoral veins of thirty-five cases of hemiplegia. The position of the lesions causing the hemiplegia was not mentioned. In all the cases the arterio-venous oxygen difference was decreased in the paralysed arms, and in many of the cases in the legs also. There was no significant difference in blood pressure, venous pressure, skin temperature, or capillary resistance between the two sides. In thirteen of sixteen cases examined oedema of varying degree was present in the affected side. Its absence on the normal side is not recorded. The authors assume that alteration in the arterio-venous oxygen difference implies an alteration in the rate of blood flow. This would be so if the metabolic requirements of the normal and paralysed limbs were identical. Using this assumption, they conclude that the rate of blood flow is increased on the hemiplegic side. They state that this "is due to a vaso-dilatation involving the arteries and arterioles, resulting from altered vasomotor reflexes of cerebral origin." Some of the very conflicting literature on the subject of cerebral vasomotor control is also discussed.

ACUTE RHEUMATIC MENINGITIS

BY

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Rheumatic meningitis is mentioned by the writers of older textbooks of medicine, but of recent years the condition is so rare that the occurrence of a case merits a detailed description. The fact that acute rheumatic fever is itself less common and less severe may account for the rarity of the condition, but it is curious that it is not more often seen. On the analogy of tuberculosis and pneumococcal infections, which have a predilection for the pleura, peritoneum, pericardium, meninges, and synovial membranes of joints, it would be reasonable to expect to find that the rheumatic inflammation which commonly attacks all of these except the meninges would also from time to time be found to affect the latter situation.

Case Record

The case here described was that of a man aged 34. He had previously been in good health, having never suffered from attacks of rheumatic fever, chorea, scarlet fever, or recurrent tonsillitis. There was, however, a marked history of alcohol for a few years previous to the present illness. He was suddenly taken ill. There was high fever; the joints of the wrists, the left elbow, the knees, and the right ankle were acutely inflamed; and there was profuse sweating. The joints became swollen in succession, not simultaneously. They were acutely painful and excruciatingly tender. They were reddened and warm to the touch, and the knee-joints contained some fluid. He was given 150 grains of sodium salicylate a day, and within three days the tenderness, swelling, and pain had completely disappeared. Fever, however, persisted at about 102°, and the case was investigated with a view to discovering the cause of this. The blood count was: red blood cells, 3,300,000; colour index, 0.94; white blood cells, 8,600. Blood culture was sterile, and the agglutination reactions were negative against the typhoid group, *B. abortus*, and *B. melitensis*.

It was on the seventh day of his illness that I was first asked to see him. He was mentally clear and had no headache, and his only complaint was of a slight pain felt centrally in the left chest and radiating to the back; this was worse on taking a deep breath. A slight cough was present. The only abnormal physical signs were those concerning the heart and the left lower lobe of the lung.

The apex beat was flabby, but localizable three-quarters of an inch outside the left mid-clavicular line in the fifth space. The area of cardiac dullness extended upwards to the second left space, and the cardio-hepatic angle was obtuse. In the fourth and fifth spaces a distant pericardial friction was audible. This disappeared in three days. At the apex of the left lower lobe posteriorly the percussion note was slightly impaired, and the respiratory murmur was broncho-vesicular in character. No rheumatic nodules were found. A diagnosis of rheumatic pericarditis was made.

Five days later the patient was again seen. He looked extremely flabby and ill. He had no mental or physical energy. The heart was still enlarged, and its rhythm suggested a partial heart-block. An electrocardiograph tracing proved the presence of this, the P-R interval increasing to 0.4 of a second before the dropped beat. It was assumed that this confirmed absolutely that the condition was one of rheumatic fever with a pancarditis. Five days later the patient was again seen. He had for the previous three days complained of pain at the back of the neck. This had come on gradually, and simultaneously there had developed a change in the patient's mental state. He was in a rambling, restless condition, but was not excited; indeed, at times he was semi-comatose. He was very confused. There were no hallucinations or delusions. Headache was not complained of, and there had been no vomiting.

On examination the cardiac condition was unchanged, heart-block being still present. Neck rigidity was very well marked, and Kernig's sign was strongly positive. There were no paralyses of the cranial nerves, and no loss of power or sensation in the limbs. The plantar responses were flexor. A lumbar puncture was performed, and the needle entered the theca without difficulty.

The cerebro-spinal fluid was very slightly yellowish, and was under pressure; the total protein was 0.5 mg. per cent., the sugar 0.05 per cent., and the chlorides 0.72 per cent.; the red blood cells were 240 per c.mm., and the leucocytes 78 per c.mm., 98 per cent. being polymorphonuclears and 2 per cent. lymphocytes; the fluid was sterile, and its Wassermann reaction was negative.

The patient made an uninterrupted but slow recovery. The central nervous system signs disappeared within about ten days, but the pulse irregularity due to the heart-block remained for four to five weeks. Four months after the onset of the illness the P-R interval was normal, but the T waves still were somewhat flattened in Leads I and II.

Differential Diagnosis

The rarity of the condition made it imperative to eliminate other possibilities before determining on the diagnosis of acute rheumatic meningitis. Each of the following was considered as an alternative: delirium tremens, meningitis of some other type, acute encephalitis, and subarachnoid haemorrhage.

Alcoholism.—There was a sufficient history of alcoholism to have produced an attack of delirium tremens, and the interval of three weeks between the cessation of alcohol ingestion to the commencement of symptoms was a possible one, although rather long. But there seems to be no record of such a high white cell count in the cerebro-spinal fluid as 78 in alcoholism; moreover, there were no hallucinations.

Meningitis, lit up by the acute rheumatism, was also considered at the time, for both a tuberculous and a syphilitic meningitis may become active during some other acute infection. The course of the disease eliminated the former, and the Wassermann reaction was negative.

Encephalitis is known to occur as an intercurrent disease during the course of measles, chicken-pox, and some other acute specific infections. Its occurrence during acute rheumatism is unknown, although certain encephalitic cerebral symptoms and pathological findings have been described.[3] The prodromal meningeal irritation, the head retraction, and the positive Kernig sign, together with the high protein content of the cerebro-spinal fluid, all suggest a definite meningitis rather than a pure intercurrent encephalitis.

Subarachnoid haemorrhage does not cause the marked encephalitic symptoms seen in the present case; the quantity of blood is greater, and signs of some local cerebral lesion are usually found in such cases. Moreover, the onset of symptoms is less gradual.

On the evidence available, therefore, the most likely diagnosis is an acute meningitis occurring in, and presumably due to, an acute rheumatic infection. The presence of some blood cells and the high protein content are points in favour of an acute rheumatic inflammatory reaction of the meninges, for haemorrhage is fairly common in the rheumatic exudates into joints, pleura, and pericardium, and in such exudates the protein content is high.

The rarity of the condition is a point worthy of consideration. It is possible that some other factor is needed before the acute rheumatism can produce a definite meningeal reaction. Possibly such a factor is to be found in chronic alcoholism, for in the two other analogous cases found in the literature there was the same possibility.

Literature

Robin and Lyon-Caen[1] describe the case of a young man aged 37 who, in the third week of his third attack of rheumatic fever, developed severe mental confusion with visual hallucinations in which snakes were prominent. Three days later he had neck rigidity and a positive Kernig sign. No localizing nervous signs were present. The heart was normal, but the joints had been typically reddened, swollen, and painful. The cerebro-spinal fluid contained many red blood cells, 250 lymphocytes, and 200 polymorphonuclear cells per c.mm. The fluid was sterile, and its Wassermann reaction was negative. The patient recovered.

Constensoux and Henry[2] describe the case of a young man of 19 who developed chorea three months after an attack of acute articular rheumatic fever. The onset of the chorea was sudden, and it was later accompanied by neck rigidity and a positive Kernig sign. The cerebro-spinal fluid contained many polymorphonuclear cells, and the albumin content was 40 mg. per cent. But in this case a complicating factor was that the Wassermann reaction was positive in both blood and cerebro-spinal fluid. The patient recovered.

Winkelman[3] reports five cases of acute rheumatism that during life had shown a severe delirium but no meningeal symptoms. In one case the cerebro-spinal fluid was normal and in the others was not examined. Post-mortem punctate haemorrhages and oedema were found in the brain, and the meninges showed slight oedema.

Gottsegen[4] described two cases of mild acute rheumatism with symptoms of meningism; both recovered. One only was lumbar-punctured; the cerebro-spinal fluid was normal.

Summary

A case of acute rheumatic meningitis is described.

It is suggested that for the development of acute meningitis during acute rheumatism some secondary factor such as alcoholism is necessary.

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A. Bessemans and U. Thiry (*Bruxelles-Médical,* August 30th, 1936, p. 1601) maintain that the favourable effects of hyperpyrexia in human syphilis have a thermal basis, particularly when the treatment consists of hot baths, or of diathermy, or of short-wave currents of about 600 metres. This is exemplified by records of fifteen cases, mainly of chancres, and the various reactions to physical treatment are discussed. The results with local diathermy with short waves of about 18 metres were good, the heating being pushed to the limit of the patient's tolerance, erythema and even oedema following in some cases. Lesser degrees of heating were much less beneficial, and the authors are satisfied that it is not the electric current which avails, but rather the induced heat, with its action on the treponemata. They add that this confirms their previous conclusion with regard to the action of short-wave irradiation on testicular syphilomata in the rabbit, bacterial lesions, or Ehrlich's sarcoma in the mouse—in all of which any reduction of the temperature induced resulted in poorer amelioration. The time factor during which the heat is maintained is also important, and there must be no cooling by air currents or the application of cold water. It is concluded that the clinical benefit depends on the destruction of the infecting organisms concerned.

THE ABNORMAL AND TEMPERAMENTAL WORKER*

BY

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The years since the war have seen the development in the business world, as in other fields such as medicine and engineering, of a demand for more accurate and objective tools to deal with the human factor than those contributed by practical common sense and experience. This demand is responsible for the growing interest in psychological tests for the measurement of occupational fitness and for other short-cut methods that may aid in the selection of new employees. At first sight these methods appear to offer the solution for all the difficulties of the past, but increasing experience has shown that such methods are limited in their application, although undoubtedly valuable within their limitations, and that human nature is too complex to be reduced to a few simple components. In practice, success or failure at work does not depend primarily on abundance or lack of ability—that is, so far as measurable aptitudes for the performance of the task are concerned—but rather on the presence of other factors of a more dynamic nature that influence the total personality and the general health of the worker, and that interfere with the use of such abilities as he actually possesses.

Anyone who works with and studies large numbers of workers will find wholly inadequate that conception of vocational guidance that implies the possession, by each individual, of some special ability to do well some particular task, and that only in that one calling is happiness and success to be found. Actually, most people can do a good many things well, if they are sufficiently interested, have developed good work habits to apply themselves effectively to a task, are physically fit, know how to work well with people, and have a healthy attitude towards themselves and life's situations. Whenever failure is found, an analysis of its causes will bring to light far more complex issues than the mere inherent capacity to perform the task in question.

Essentials in Adjustment

Adjustment at work represents the major objective in all labour policies and in the various social movements and developments that characterize progressive industry to-day, but, in spite of the application of all these methods, individual instances of maladjustment still occur, and are probably increasing both in numbers and in importance. The adjustment of an individual to his occupational, domestic, and social obligations requires a congeniality, compatibility, and a harmonious relationship between the individual and the situation. In work this relationship is established when the individual is reasonably efficient, when he attains a reasonable degree of satisfaction from the work, maintains his physical health, and when his activities are conducive to the wellbeing of the social group of which he is a member.

A failure to achieve any one of these three objectives in work constitutes maladjustment. This may follow from a lack of aptitude for the work, from inadequate training, and from a disregard of adverse working conditions such as lighting, ventilation, and noise, although in modern factory and office buildings these problems have been largely solved. Where such conditions are adequately controlled it most frequently follows from an inadequate emotional adjustment of the individual to major aspects of his life—to superiors, to inferiors, to family situations, and to the competitive aspects of industrial life.

The person whose emotional balance is disturbed for any reason whatsoever will express this not only in his relations at home and in his social group, but also at work. Inasmuch as his feelings and emotions are inherent aspects of himself, he carries them with him, so to speak, into every situation which he enters. Now since he has no understanding of himself, and actually shows an infantile belief in his own infallibility, it is not surprising that he blames the wage system, or the lighting, or the foreman for his own unhappiness and dissatisfaction with himself.

Manifestations of Maladjustment

The overt expressions of emotional maladjustments are multitudinous in type; for convenience they may be divided into those showing themselves in behaviour disorders and those masking themselves as illness, either frankly "nervous" or aggravating physical disorders and delaying their recovery. Perhaps the most common of all is the tendency to blame others for one's own failure: in the words of the old joke "everyone is out of step except our Harry." In such cases foremen, the wage system, the management, capitalism, and fellow workers may all be blamed in turn or together for the individual's lack of success. On the other hand, many of these cases manifest themselves as medical or absentee problems; they are the individuals who exaggerate every ache and pain, tend to stay out for inadequate reasons, and take an unduly long time to recover from physical disorders such as tonsillitis or influenza.

The worker who continually complains of being tired, sometimes to the point of complete exhaustion, is so well known that it is unnecessary to go into great detail in describing this symptom. The "tired feeling" may or may not have its fundamental basis in the physical condition of the individual. Like many other compensatory symptoms it is frequently a disguise for a more or less serious emotional maladjustment of the worker. The individual who finds himself handicapped by feelings of inferiority and insecurity, or who is unable to measure up to the standards of his work, tends to compensate in one way or another; one of the most common ways is through feelings of fatigue. This feeling of tiredness may be general or may apply rather to some definite part of the body, as the back, limbs, eyes, or that part of the body primarily involved in the performance of his work. These feelings and loss of function may become so serious as to result in a complete incapacitation of the individual for every kind of work. This is well exemplified in the following case.

A young man, aged 24, was seen on account of severe headaches coming on when he started work in the morning and varying very much in intensity according to his mood. He had been employed as a stock-clerk for over two years, and felt that he was in a "blind alley" occupation with poor facilities for promotion. He was walking out with a young lady who was very anxious that they should be married in the comparatively near future. At times she expressed herself somewhat forcibly regarding his limited earning capacities, and his headaches always became worse after a discussion of this type.

Physically, no signs of disease could be found. Examination of the eyes showed that they were normal and that there was no indication for glasses. A short discussion followed in which the production of symptoms due to emotional causes was pointed out, and the young man was advised to discuss his chances of promotion with his superior. As a sequel, his condition has improved very markedly and he now has a much better understanding of himself. The headaches, although occurring occasionally, are no longer incapacitating.

*Read at the Oxford Conference of Directors, Managers, and Foremen, Balliol College, on April 17th, 1936.

Relation of Dissatisfaction to Sickness

For some years the Industrial Health Research Board has been conducting research work into the problems of industrial sickness and absenteeism in an attempt to isolate the various causes which may operate to produce this heavy drain on industrial productivity and individual happiness. With this object the Board has been provided with sickness absentee figures by a number of firms over a period of years. The rate used was the number of days lost through sickness per person per annum.

Where records are available for a number of years for the same organization there was found a general consistency in bulk annual rates, but there was a very great discrepancy between individual concerns, even where extrinsic factors such as security of tenure and working conditions were identical. In some cases the rate was three to four days per head per annum, while in other concerns rates as high as fifteen days have been found, this last high figure resulting even when firms are doing their best for the workers. When the figures are analysed according to the medical diagnoses the excess is found to be made up largely of disorders frankly labelled "nervous" or of rather vague troubles like gastritis, anaemia, and debility.

It is not contended for one moment that disorders thus described have no existence—they are known to all of us—but that when they occur in excess they indicate nervous troubles under these names, and are in reality escapes from unpleasant situations into illness. This process is not malingering in the accepted sense of the word, but an unconscious process occurring in an unstable personality who is unable to meet life's demands in an appropriate fashion. It is important to realize that the unfortunate doctor is never allowed to say that he does not know the "disease" from which his patient is suffering. When a man or woman is out of sorts and feeling unfit to work the doctor must give his disease a name, and in the ordinary way he has no control over environmental factors inside the office or factory where so much of the individual's time is spent.

Now it has been found by Professor Culpin, who has been investigating the problem of industrial sickness for some years for the Industrial Health Research Board, that the number of people in an organization who like and enjoy their work is inversely proportional to the amount of absenteeism. If 80 per cent. are satisfied with their work, the sickness rates are low; if only 40 per cent. are satisfied, the sickness rates are high, and there are in that organization a number of factors militating against industrial proficiency and individual happiness and health.

The problem may be compared to the parable of the seed and the soil. Under modern conditions of Western civilization, a considerable proportion of the population are emotionally unstable, due originally to faulty upbringing in their early years. But these persons are able to carry on fairly well provided that the "soil" in which they are growing is not too adverse, and that they do not get attacked by the "birds of the air" or "blight" in the shape of extrinsic factors in their domestic and social life. Now industrial organization has the power to modify the soil, and to see that it corresponds with accepted standards. It is unnecessary to mention the importance of daylight lighting, good ventilation, canteens, and rest pauses; they are now generally agreed to be part of normal industrial management among progressive employers. There are, however, more intangible but equally important factors that affect the problem of the industrial worker, and of these the most outstanding are: (1) the quality and type of first-line supervision; (2) the question of security and insecurity; (3) the problem of early initiation and training; and (4) the supervision of the physical and mental health of the workers.

Importance of Supervision

As regards supervision, some very illuminating work has been done during the last few years by Professor Mayo in the Western Electric Company in the United States. Constant observations under different experimental conditions were made on a group of five experienced girls engaged in the repetitive work of assembling telephone relays. Accurate records of production from instant to instant were made over a continuous period of three years. During this time various environmental factors were altered; rest pauses were introduced, and later removed; and hours of work were both shortened and extended. Throughout the whole investigation, and despite various changes, output rose steadily, and on the average was 25 per cent. higher than before the investigation. In the words of the investigators:

"A relationship of confidence and friendliness has been established with these girls to such an extent that practically no supervision is required. In the absence of any drive or urge whatsoever they can be depended upon to do their best. They say they have no sensation of working faster now than under the previous conditions, and that their greatly increased production has been accomplished without any conscious effort on their part. Comment after comment from the girls indicates that they have been relieved of the nervous tension under which they previously worked. They have ceased to regard the man in charge as the 'boss.' They have a feeling that their increased production is in some way related to the distinctly freer, happier, and more pleasant working environment."

It was found that payment was only one of many factors making for contentment, and that in most cases it played a very secondary part. According to the investigators "the relationship between first-line supervision and the individual workman is of more importance in determining the attitude, morale, general happiness, and efficiency of the employee than any other single factor."

My own experience bears out these conclusions in every detail, and I feel convinced that it is one of the most pressing problems which industry has to face. One has only to compare the care and thoroughness with which corporals and petty officers are selected and trained in the Services with the nepotism and lack of training that still characterize many industries in this connexion to-day to realize the steps that will be taken in future years.

Group Reactions

The progressive mechanization and specialization of work have removed much of the inherent satisfaction that can be secured from the creation and completion of one particular product or task; the monotonous character of many office and factory tasks leaves the worker with a great deal of time for rumination and day-dreaming. If the contents of the thoughts are pleasant, the worker will continue with the task quite happily, but if he or she is feeling resentment due to injustice or undue drive from the foreman, there is plenty of time available for the ideas to be gone over and magnified many times. Naturally such ideas are discussed with fellow workers, who frequently reinforce the incident by exaggerated memories of past incidents.

This tendency for feelings of happiness or unhappiness to be shared with those around one is well recognized by us all in ordinary social life, but the importance of this group behaviour in the industrial setting is not always appreciated. Problems of supervision and management grow out of the fact that the individual is always acting under group conditions, although nowhere is his individuality completely submerged.

One of the outstanding characteristics of group activity is the heightened suggestibility of individual members of the group. Actually an individual involved for any length

of time in crowd action soon finds himself in a state closely resembling that of the hypnotized individual. This effect was frequently observed during the war when, if in the course of a retreat a single soldier threw himself on the side of the road and gave way to an attack of "nerves," in an hour or so a hundred men would be found in the same plight. Its force is particularly apt to be felt under the influence of fatigue or conditions of strained attention, such as coexist with excessive overtime and uncontrolled speeding-up.

Security and the Sense of Fear

Another big factor contributing to dissatisfaction and maladjustment is the question of security. We have seen that the individuals especially prone to dissatisfaction are in reality immature individuals who have carried over into their adult life a number of childish characteristics which are normally discarded by other people. Among the most frequent characteristics is an undue amount of fear. It is found that these people are afraid of the dark, afraid of going in buses or tubes, afraid of crowds, and afraid of the future. In other words, they show a state of abnormal anxiety, and no amount of telling them that it is "all rubbish," or that they have got to pull themselves together, will alter this state of affairs. As a rule this undue fear has been built in by over-solicitous parents during the early formative years, and prolonged treatment is frequently necessary for its eradication.

We all know how exhausting it is to be in a state of apprehension about some particular event in our lives. Under such conditions the appetite is capricious, sleep is disturbed, reasoned decisions are impossible, and one feels irritable with everybody and everything. It may be thought that this is an exaggerated picture, and is only true of the odd individual who is "a bit queer." A few years ago Professor Culpin and Dr. May Smith interviewed over 1,000 employed persons in order to estimate the extent of these nervous characteristics, the persons being drawn from Government offices, factories, laundries, and large commercial houses. Whole departments were interviewed so that the results should not be selective. It was found that approximately 30 per cent. of these persons showed definite evidence of an unstable nervous make-up which would predispose them to marked discontent or breakdown under adverse conditions. An example of this trouble is evidenced by the following case which came under observation recently:

A girl, aged 19, and employed in assembling electrical components, was seen as she was frequently ill for a few days at a time, and was also taking days off for no very apparent reason. She was the youngest of three children and had always been treated as the baby of the family. She had been employed for three months, and had held four different jobs since leaving school. She gave a history of generalized fear—for example, of the dark, of the future, and of her foreman. She had never been able to ride a bicycle as she felt too nervous to learn. She could not go to cinemas because she felt that what was being portrayed on the screen was really happening to her.

Six weeks before coming under observation she had been changed from day work to a form of piecework, and said that she got annoyed if some of the other girls did better than she did. Her last absence had been precipitated by the fact that the girl next to her said something derogatory about her to a neighbour. In addition, she stated that the noise got on her nerves, but that she felt much better on some days than on others.

Here, then, is an immature personality, who is dissatisfied with herself and projects her dissatisfaction on to her environment; in the process she blames the noise and her fellow workers and her wage system in turn. Further inquiry elicited the fact that she was very dependent on her father, and ran to him on the slightest provocation. The causes for this unhappy state of affairs are to be found in the early formative years, and the case is in reality a problem of parent education.

The girl was given considerable reassurance regarding her irrational fears, and was encouraged to seek social interests outside the family group. In addition, the foreman's co-operation was secured; he was asked to give her special encouragement, and thus supply some of the moral support she was in the habit of receiving from her father. Physically, she was found to be perfectly normal, so that ill-health was not a contributory factor in this case. Since that time, and in consequence of three further interviews, she has improved very markedly, and is now enjoying her work and feeling at home in it; she has not lost any more time.

Now if 30 per cent. of the working population show varying degrees of emotional instability, it follows that every firm and organization must have its quota, and it can be seen that attention to such questions as noise and other aggravating causes of nervous irritation is obviously indicated. When we come to the reaction of such individuals to their emotional environment, it can be seen how destructive it is to stimulate still further their sense of fear either by aggressive supervision or by the terms of their employment.

The Dissatisfaction of the Adolescent

It was mentioned earlier that the maladjusted worker was in many cases one who had carried over into adult life a number of childish characteristics that interfered with his functioning happily and efficiently on the adult level. It follows from this that dissatisfaction is especially liable to occur in the years of adolescence, when the individual is still in the formative stages. For convenience this period may be regarded as extending from 14 to 21, although this limit is somewhat arbitrary and can be extended both ways, as adolescence does not suddenly begin or end.

I look to the time when the whole question of initiation and early training in the basic principles and ideals of industry will play a very much bigger part than it does to-day. There is no doubt that the young worker, whether in the office or works, does not receive the individual training and attention in his early days that is really needed. In many cases there is still a general belief that financial incentives play the predominant part in industrial proficiency and contentment, but actually there are many other instincts that can be developed for the benefit of both the industrial and the social structure. The crowd or group instinct should be considered as among the most important aspects, and in this instance early impressions are notoriously important in order to prevent dissatisfaction later. Apart from a well-organized personnel or labour department, which maintains individual contact with all new workers and controls placement, I believe that there is considerable scope for the development of day continuation schools as envisaged in the Hadow Act, where the sense of group solidarity can be promoted and some understanding of the biological aspects of life can be given.

Care of the Individual

So far we have discussed the various factors making for individual dissatisfaction in industrial life. We have seen that they depend primarily on the way that the worker is received and trained, and more particularly on the way he is treated by his immediate superiors in day-to-day contacts. In addition, we have seen that some 30 per cent. of the normal employed population are in reality "nervous" individuals, potentially liable to dissatisfaction and perhaps breakdown in the face of the "slings

and arrows of outrageous fortune." However perfect the organization, however meritorious the ideals of the management, and however "scientific" the wage system in vogue, some at least of these 30 per cent. are potential misfits, and sources of dissatisfaction to themselves and those around.

The control of dissatisfaction at work, whatever its source, demands essentially an individual approach to each case, irrespective of the presenting symptoms. Increased irritability, frequent absences, and prolonged illness of indefinite type are all manifestations that the person is making an inadequate adjustment to the demands of life and environment. This method of approach is comparable to that utilized in child guidance work and in the therapeutic approach to adult neuroses. Each case must be considered as a total entity against a varying mental and physical environment, and it follows that the treatment must be equally individualistic in character. Each case must be examined physically and psychiatrically, so that a suitable programme may be mapped out. In addition, equal attention must be paid to the work environment in which the individual is placed and to the processes of production and the type of supervision with which he is faced. Only in this way is it possible to see the individual as a whole, and to obtain a real understanding of the presenting problem that will lead to real and lasting results.

Conclusion

Surely it is somewhat ironical that although every individual is seeking the greatest possible happiness in life compatible with the discharge of his social and moral obligations, nevertheless those very factors which are most antagonistic to happiness in the industrial setting—physical and mental health—have been almost completely ignored until very recently. What chance of happiness, for instance, has the individual who is constantly troubled with excessive fear, worry, "nervous indigestion," anxiety, uneasiness, or with some one of a host of other ailments of a similar nature? How much can the "right job" mean to the man who is constantly obsessed with thinking about a certain number or other irrelevant fact?

At last, however, the problem of emotional dissatisfaction is forcing itself on the attention of many thinking men who are concerned with the industrial structure. In the coming years, industry must once more broaden its perspective towards the individual upon whose labour it depends. Just as it has come, through increased good will and the various Factory Acts, to improve and augment the physical environment, it must now give equal attention to the securing of the proper orientation of mind, as it affects the individual's work, health, and behaviour.

F. Wise and J. Wolf (*Arch. Derm. and Syph.*, July, 1936, p. 1) deprecate the popular haphazard method of diagnosing all vesicular eruptions of the hands associated with a fungus infection of the feet as epidermophytids, moniliids, or trichophytids. A very large proportion of the adult population of the U.S.A. have or have had at some time a fungus infection of the feet, therefore intradermal or patch tests with trichophytin are of little value in the differential diagnosis of these cases. Careful history-taking is important, and occupational dermatitis, dermatitis venenata, and eczema must be carefully excluded. Finally, a diagnosis of epidermophytid should not be made without strong corroborative evidence, chief of which is the demonstration of fungus either microscopically or by culture from the focus of infection in the skin or nails. They admit, however, that a great many cases of vesicular eruptions of the hands are dermophytids.

ELECTROTHERAPY AND ITS FUTURE*

BY

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It is a most remarkable fact that, among the many and varied agents employed in combating disease, the most powerful, the most easily regulated and controlled, the most fundamental in its action, and the most universally called for, is almost entirely neglected by the medical profession.

Electricity is steadily invading every other sphere of our daily life, but, so far as the human body is concerned, in the activity of which every phase has an electrical basis, its action and application are almost entirely overlooked. It can be confidently asserted that no other form of treatment has a more definite physiological basis or requires for its efficient administration a more intimate and extensive knowledge of the fundamental principles of the vital forces both in health and in disease.

If we wish to apply electrical treatment in a scientific manner and with its maximum therapeutic effect, we must do so in regard to this fundamental action rather than administer it in a purely empirical manner, merely asserting that such or such a treatment is good for such or such a disease.

Methods of Electrotherapy

Let us consider the various forms in which electricity is available for therapeutic purposes. Its primary and fundamental action is that of a blow or impact. Professor Jellinek has demonstrated how, provided that the voltage is sufficiently high, it is possible to drill a hole in paper, wood, stone, or metal without the edges of these holes showing any detectable signs of heat or chemical action. It is the impact of the electrons emitted from the heated cathode of a Coolidge tube which, when they strike the anti-cathode, gives rise to the *x* rays. In the tungsten arc, it is the electrons thrown off from the heated carbon cathode which, impinging on the positive tungsten electrode, initiate the specific ultra-violet radiation characteristic of the metal upon which they strike.

THE STATIC BREEZE

In electrotherapy, the high voltage of the static spark striking upon an oedematous surface immediately produces a pitted white mark from which the blood and oedematous fluid has been temporarily forced out. When the static breeze is directed upon a raw surface which has been freely dusted with such a relatively non-toxic substance as boric powder, very severe toxic symptoms may develop from the absorption of the particles of the drug forced in at this high voltage.

If the static breeze is directed upon a small pustular papule, the scattered infection will give rise to an areola of similar papules—an unfortunate occurrence which clearly demonstrates the dispersal action of this current. When the static charge is administered, the patient's high-voltage negative charge is attracted to the whole surface of his body by the positive charge induced in his surroundings. In this manner, the electrostatic tension on the cutaneous nerve endings reflexly stimulates the endocrine glands, results in a rise of blood pressure, and is followed by a most invigorating reaction. By means of the Morton wave-current obtainable from this instrument we are able to excite such powerful muscular contractions that by their

* Read in opening a discussion in the Section of Physical Medicine at the Annual Meeting of the British Medical Association, Oxford, 1936.

means both peri- and intra-muscular adhesions may be broken down and, when applied to the prostate, far more effective drainage ensues than can be obtained from any form of digital massage. So effective indeed is this method that it must be applied with great caution in cases of acute infection of the prostate.

THE CONSTANT GALVANIC CURRENT

The galvanic current affords the choice of a variety of electrotherapeutic methods. In the form of the constant current it is mainly utilized to deposit ions either on the surface, or upon the lining of accessible cavities, or within the subcutaneous area of the part treated. The procedure is an electro-chemical one, and the effect depends upon the salt employed. When salts of a caustic or destructive action are applied, septic membranes upon the surface or within accessible cavities may be speedily and effectively destroyed. When salts of merely stimulating action are utilized, a reflex stimulation of the cutaneous nerve endings results in a prolonged increased blood supply—hence increased nutrition and resisting power in the region treated. If such a treatment is continued in cases of chronic rheumatoid and osteo-arthritis for a period of six months, relief of pain, reduction of swelling, and increased power of locomotion will be obtained to a far greater degree than can be approximated by any other method. Unfortunately, the need for prolonged treatment in these chronic conditions is not fully realized, and the application is carried on for far too short a time for the full benefits to be achieved.

By the interruption or reversal of the electrical current at rates varying from 1 to 100,000,000 times a second we are able to obtain most remarkable and valuable therapeutic results of a very diverse character, and we are able to adjust the voltage and amperage to meet the different demands at these varying frequencies.

THE INTERRUPTED GALVANIC CURRENT

When we interrupt the galvanic current at a low rate we obtain isolated muscular contractions which are of value for electro-diagnosis and re-education. By the interruption and reversal of the current at relatively high voltage by means of the faradic coil we elicit contractions of a physiological type which quickly restores to a muscle the normal tone that it may have lost from injury or other cause. By employing currents of lower voltage and greater amperage, such as the sinusoidal or preferably the Watteville currents, we are enabled to stimulate all the tissue cells within the interpolar path, according to the rate of interruption, fifty or more times a second by the recurrent hydrogen and hydroxyl ion concentration which occurs at every interruption and reversal of the current. The benefits derived from these currents are essentially different from those obtained from the higher voltage and lower amperage of the faradic coil. In the former case, owing to the greater number of ions involved, the nutritional effects are much increased. It is the method of choice for the treatment of ununited fracture and for oedematous extremities.

The Leduc Current.—In my opinion, one of the methods of the greatest scientific interest, and in a limited number of cases of the greatest value, is that form of the interrupted galvanic current known by the name of its discoverer as the Leduc current. It will be remembered that Leduc, of Nantes, claimed some years ago that he was able, by means of a current of about 12 volts and only 2 mA., interrupted 100 or 200 times a second, to produce local and general anaesthesia. In the treatment of the intense burning pain which characterizes that most distressing condition known as causalgia (καῦσις, burning heat, ἄλγος, pain) the Leduc current is one of the most certain remedies that I have witnessed in any disease. The neurologists have admitted their failure in the treatment of this condition by advocating section of the sensory nerves. The action of the current is speedy, and the relief afforded lasts for about twelve hours, so that by administering the treatment twice daily the pain is kept in subjection and the patient makes a rapid recovery. The physiological explanation of the action of this current is, I think, to be found in the theory of the absolute and relatively refractory periods of nerve stimulation. The combined refractory period following nerve stimulation corresponds closely with the rate of interruption which has been found to be most effective with the Leduc interrupter. In the treatment of acute neuritis I have found the Leduc current most useful in the class of case which high frequency currents fail to relieve.

Lapicque's Interrupted Current.—Another scientific and most interesting form of interrupted current of low frequency we owe to the distinguished physiologist Lapicque. By this method we are enabled to graduate the make-and-break stimuli so that the paralysed muscles are stimulated to contract without exciting any contraction in the healthy muscles. This method is of special value in the treatment of Bell's palsy and infantile paralysis, since it entirely removes the objection to muscle stimulation in these cases on the ground that it leads to the over-stimulation of the healthy muscles.

Interrupted Low Frequency Currents

All the interrupted currents of low frequency owe their action to the fact that the hydrogen ion possesses a velocity five times faster than any other cation, and two and a half times faster than any anion. The result of this is that, at the make of the current, a concentration of hydrogen ions occurs at the negative pole, causing an acid stimulation of the nerve endings in this region, which excites both a muscular contraction and an unpleasant sensation. At the break of the current the more rapid hydrogen ion, rushing away more quickly from the positive pole, leaves a temporary preponderance of hydroxyl ions which exert an alkaline reaction in the neighbourhood of the positive pole and thus give rise to a muscular contraction proceeding from this pole.

Thus the phenomenon is an electro-chemical one; the chemical reaction, however, requires a very brief but yet a measurable time to take effect; if the current is reversed with sufficient rapidity for the hydroxyl ion to neutralize the hydrogen ion, and *vice versa*, before either has time to become effective, no muscular contraction will be excited and no sensation will be experienced. This constitutes a clinical high frequency current.

High Frequency Currents

In 1888, d'Arsonval, when experimenting on the effect of interrupting the alternating current from a Ruhmkorff coil at various frequencies, found that muscular contraction diminished in vigour when a frequency of 2,500 was approached. Two years later by employing the wireless apparatus of Hertz he obtained a frequency of a million or more a second, and found that at this high frequency all muscular contraction and sensation were abolished. In this way he realized his great discovery of the clinical high frequency currents, which have already added so much to the value of electrotherapy; they promise even greater benefits in the future when we shall have developed their technique, and understand more fully their mode of action.

In their original form the high frequency currents of d'Arsonval (*d'Arsonvalisation*) were currents of relatively high voltage and low amperage. It would not be surprising if, when the basic action of high frequency currents is better

understood, that these original currents of d'Arsonval were not found to be still the most suitable for certain conditions. By certain alterations in the design of the instruments, high frequency currents of lower voltage but higher amperage were obtained, namely, the high frequency currents of quantity or diathermy.

In recent years, by increasing the frequency of the oscillations fifty or even one hundred times, the currents of capacity have replaced the currents of conduction which predominated in the diathermy currents, and in this way the high frequency currents of capacity or resonance, the short or ultra-short high frequency currents, have been obtained. For this last development we are indebted mainly to the work of Schliephake and Esau. Since these currents form the subject of a later discussion, it would be out of place to refer to them at greater length.

General Claims

Even from this brief and inadequate review it must, I think, be evident in what manner we are able to harness Nature's most powerful force to the requirements of the healing art. We may employ electricity in the form of the most violent blow or the gentlest impact; we can induce chemical changes on the surface or within the cavities, and we can modify the reaction of the whole body; we can set up polarization, orientation, and vibration of the molecules with which the body is built at inconceivable frequency. Bony structures no longer offer an impediment to the action of our currents, for, owing to their leaky condenser action, we can effect them by the short waves within and on their outer and inner surfaces with equal facility and effect. This, I think, offers an explanation of the claim for the deep action of these currents.

If electricity is of no use in the treatment of disease, it is surely not the fault of the agent, but of the neglect with which it has for so long been treated by the medical profession. It is owing to neglect and indifference on the part of the medical profession that the suffering public have for so long and so regrettably been deprived of the curative action of electricity.

Earlier and More Modern Views

Let us see how the more enlightened of the distinguished medical men of the past regarded the value of electrical treatment at a time when the appliances for its application were undeveloped and its action but little understood. John Birch (1745-1815), one of the most distinguished surgeons of his time, surgeon to the Prince of Wales and to St. Thomas's Hospital, thus wrote, some time before 1780 (*Considerations on the Efficacy of Electricity in Removing Female Obstructions*):

"The present medical reputation of electricity has been acquired by a gradual course of experiments, first upon such cases as medicine and surgery were insufficient to relieve, and afterwards on many, where the cures remained imperfect, or where the habit wanted its peculiar influence to remove particular symptoms, or to give action to deficient powers. During my education at St. Thomas's Hospital, I had seen so many remedies fail of their promised success, after a candid trial, and among the rest electricity, that on resuming practice I proceeded slowly, and doubted much, cautious of being misguided by false appearances, till experience taught me that, when I was unsuccessful, it more often proceeded from want of judgement in the application, than want of power in the remedy. But by a diligent attention to every circumstance which occurred, and an impartial examination of facts, I was led by degrees to extend its practice more generally; and I have the pleasure to find my endeavours have not been misapplied, because the terrors of the knife have been frequently prevented, and some of the common suffering of humanity much alleviated."

In a later paper, Birch alludes to the greater attractions of surgery rendering it difficult to get the students of his hospital to take up electrical treatment:

"An operation is often more admired than a cure by other means, as it is at once both splendid and lucrative. I am therefore obliged to limit the hospital practice to particular cases, which I attend myself, because I can so seldom prevail on a young student to take the necessary pains which are required to become an able electrician." (*Essay on the Medical Application of Electricity*, London, 1802.)

Among all the writers on electrotherapy no one has approached the subject in a more logical, scientific, and practical manner than Dr. Golding Bird (1814-1854), physician to Guy's Hospital, in the lectures which he delivered to the Royal College of Physicians in 1847. Allowing for recent advances, his remarks apply equally to-day as when they were uttered:

"Electricity has been by no means fairly treated as a therapeutic agent; for it has either been exclusively referred to when all other agents have failed—in fact often exclusively or nearly so, in helpless cases—or its administration has been carelessly directed, and the mandate 'Let the patient be electrified,' merely given, without reference to the manner or mode, of the remedy being for an instant being taken into consideration."

The value of Golding Bird's work is demonstrated by the influence that it had on his colleagues at Guy's Hospital, which at that time had an exceptionally distinguished staff. Among others, Richard Bright (1789-1858), Thomas Addison (1793-1860), and Guy Babington (1794-1866) sent patients to Bird's electrical department. The writings of Thomas Addison reveal him as a converted sceptic:

"It was whilst brooding over the humiliating failure of a host of remedies employed in such cases (chorea), and which will be described in the sequel, that, as a last resource, I determined upon giving electricity a fair trial. I was perhaps in some measure, induced to do so, in consequence of having an opportunity of securing the assistance of Mr. Golding Bird in its application. The effect produced by it at once gratified and surprised me: and led to further trials, the results and particulars of which will not, I trust, be deemed altogether unworthy the attention of the profession."

He further adds:

"It is much to be feared, that many persons, like myself, have been led greatly to underrate its efficacy, either in consequence of its vague and indiscriminate recommendation, or from the inefficient and careless manner in which it has been applied. Certain it is that, although I have often ordered it myself, and have more frequently witnessed its employment by others, I had never for a moment entertained the belief that it possessed the power over the disorders alluded to, which I am now inclined to concede to it." (*Guy's Hospital Reports*, 1837, vol. ii.)

Medical and Lay Electrotherapists

When we turn to more recent times, we must acknowledge the great debt that electrotherapy owes to the late Dr. Lewis Jones. For a period he almost alone carried on the fight for the recognition of electrotherapy in this country. In the immediate pre-war period, largely as the result of Lewis Jones's enthusiasm, an increasing number of general practitioners were induced to give a trial to such simple measures of galvanism and, impressed by the very favourable results that they obtained, were led step by step to employ more advanced electrical methods. In this way a small band of enthusiasts, well grounded in the basic principles of medicine and surgery by the experience they had gained as general practitioners, were practising electrotherapy. By keeping in touch with the modern methods of this rapidly developing science, they were slowly but surely securing for it increased recognition.

After the outbreak of war, as the value of electrotherapy in the treatment of the wounded received more recognition, the number of medical men capable of administering it became totally inadequate, and the Chartered Society of Massage and Medical Gymnastics most opportunely provided an increasing number of trained electrical assistants.

I am very anxious to avoid depreciating in any way the valuable services of the members of the Chartered Society

They belong to an admirably administered organization; the course of instruction which they undergo, though far too brief, is as good as is obtainable under existing circumstances. Their examinations are thorough and excellently conducted. Among their members there are, of course, as among any other body of practitioners, the good, bad, and indifferent. But, when all has been said in their praise, it must be admitted that they have distinct limitations.

Possessed of no clinical knowledge of disease, their administrations can only be of an empirical character. Indeed, as I have frequently stated, under existing conditions, electrical treatment is prescribed by medical practitioners who have no knowledge of the remedy that they are prescribing, and the treatment is administered by those who are entirely ignorant of the nature of the disease which they are treating. Moreover, despite his entire ignorance of electrical matters, the medical man frequently prescribes a definite form of electrical treatment, usually "radiant heat," to which the technical assistant is bound to adhere, although her experience may teach her that it is far from being the most suitable form.

Again, the first treatment may be of a tentative character from which we learn the most suitable procedure, and in the course of the case we may have to vary our treatment as the patient progresses; in these respects the masseuse is handicapped by fear of giving offence to the doctor in charge of the case. As Bergonié rightly pointed out, the success of electrical treatment depends upon the spirit which directs and the hand which applies it—in the same way that in a surgical operation the prognosis depends to a large extent upon the technique and the manual skill of the operator. The treatment rooms of these technical assistants engaged in private practice are as a rule very inadequately equipped.

Now, a very curious position has recently arisen. Although the British Medical Association numbers many electrotherapists among its members, the Association is now publishing lists of these mere technical assistants, giving their names and addresses and advising medical men to send their patients to them, at the same time entirely ignoring the claims of its own fully qualified members. Apart from its manifest unfairness, this procedure is having a most serious effect upon the progress of electrotherapy in this country. In the past, most of our most competent electrotherapists were recruited from the ranks of medical men who, after years of experience of the principles of medicine and surgery gained in general practice, were desirous of taking up the specialty of electrotherapy. Now such a course is no longer practicable for financial reasons, owing to the competition of the 9,000 or more members of the Chartered Society to whom medical men are recommended by the British Medical Association to send their patients.

The effect of this regrettable procedure is clearly shown in the attitude of the instrument makers. Before the war, when it was held that electrical treatment should only be administered by medical men, the instrument makers concealed, as much as possible, their dealings with the unqualified, and looked to medical men for advice on the development of their instruments. At the present day, the instrument makers recognize that it is on the technical assistants that they must rely mainly for the sale of their wares, and they turn their attention to the manufacture of the instruments which these assistants have been accustomed to employ at the hospitals at which they were trained, and they devote any inventive genius which they may possess to improvement in the chromium plating or bakelite finish of their apparatus.

Time will not permit me to develop this argument further, but I think that I have said enough to make it plain that electrical treatment cannot develop fully, nor can its great possibilities be adequately realized under such deplorable conditions. What is the remedy for this unsatisfactory state of affairs, and what will be the future of electrotherapy? I would submit for your discussion the following points.

Future Developments

Neither of these questions, it appears to me, is difficult to answer. The obvious solution clearly is that electrotherapy should be included in the medical curriculum and in the schedules of the various examination boards throughout the country. Michael Faraday, when appearing before a Royal Commission for the Advancement of Science, is stated to have said, "If you want Science, you must begin by creating science teachers." Similarly, if you want scientific electrotherapy, you must begin by creating teachers who will deal with electrotherapy on a physical and physiological basis.

No science or art can develop to its full extent on the lines upon which electrotherapy is practised to-day. As the great Greek philosopher said: "If we wish to master any art, or to gain a scientific knowledge of it, we must study its general principles, and make ourselves acquainted with them in the proper manner." But the mere appointment of teachers would be insufficient. Attendance at a course of lectures on the subject must be made compulsory for students, and they must be made to submit themselves to an examination on the general nature of the treatment and the kind of case likely to be benefited by it before they become fully qualified medical men.

To illustrate the recent growth of electrical treatment and massage may I be allowed to quote from the annual reports of our Oxford Hospital. The number of attendances in 1914, when the department was first opened, was 8,593. The number has steadily increased each year, until last year, 1935, it reached 32,554, compared with 52,823, the aggregate attendance at the thirteen other special departments of the hospital. In 1935, 1,009 patients attended the electrical department and were treated for 120 different diseased conditions, though this classification includes some cross classification. In these days of overcrowding can the medical profession allow a method, so generally called for, to pass from its hands into those of unqualified practitioners? But the more important question is, ought the suffering public to be deprived, as they are so largely at present, of so powerful a remedy which strikes directly at the basis of the trouble and in many cases produces a cure in a few days of conditions which have resisted for weeks or months the indirect action of drugs, liniments, and ointments?

Electrical treatment is another instance of a fact which is often mentioned, that in many respects the poor at the present time are better off than the well-to-do. The poor and needy can always resort to our modern and well-equipped hospitals, and there receive the most recently developed treatment and the benefit of the most recent appliances.

Nearly every branch of medical practice is tending steadily towards specialization and institutional treatment. In no branch is the need for institutional treatment more evident than in that of electrotherapy. The reason for this is twofold: (1) the very high cost of adequate equipment, and (2) the time occupied by the treatments. In the future, it will only be the large clinics and hospital departments that can afford to install a complete or even adequate equipment. The interests of patients, medical practitioners, and technical assistants alike will be best achieved by such a plan. Whole-time medical men, with adequate salaries, will be required to order and supervise the treatments, and many technical assistants will be needed to

administer the treatments under the direction and supervision of these qualified specialists. The cost of such treatments will be only one-tenth that of those administered in private practices, and will be often ten times as efficient.

It is thus that I forecast the future of electrotherapy. Golding Bird said, "Electricity has been by no means fairly treated," but I am confident that, as we become more fully acquainted with Nature's basic principles in health and disease, so we shall tend more and more to utilize her most fundamental, powerful, readily controlled, and most universally called for agent, namely electricity.

"*Naturam expellas furca, tamen usque recurret.*" Attempts have been made in the past to expel electrotherapy with the pitchforks of prejudice, ignorance, indifference, or even of ridicule, but nevertheless this form of treatment has always returned with renewed vigour. At the present time it occupies a firmer position in the healing art than ever before in its 200 years of history. Its future, however, rests very largely in the hands of those who direct medical education and research.

REDUCTION OF SICK WASTAGE AFTER ATHLETIC INJURIES

BY

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In the care of sports injuries, unnecessarily prolonged sick wastage and expense to the patient will continue until the treatment of injured muscles and joints is put on the same functional basis as the modern (Böhler) methods for the treatment of broken bones. Practically all injuries to muscles and ligaments—for example, "pooped" thighs, sprained ankles, etc.—thrive best on firm support and immediate use, even where this involves weight-bearing. I have proved this in seventeen years' practice amongst undergraduates whose athletic ambitions demand a return to the competitive arena in the shortest possible time. Indeed, with the co-operation of a pioneer patient, it was discovered some four years ago that even the knee-joint, hitherto sacrosanct when afflicted with severe traumatic synovitis, really benefits equally strikingly by application of these principles. Thus, one patient gained his rugger blue within fourteen days of sustaining a "ballooned" knee-joint; other cases have responded equally well to this treatment.[1] Correct treatment promptly carried out will:

1. Shorten sick wastage.
2. Obviate many of the indications for massage and other forms of physiotherapy.
3. Avoid the atony and atrophy of disuse, and keep the patient in comparative training, so important for early competition.
4. Maintain his general health and morale on a much higher plane.

Böhler's Methods

In treating injuries of bone, the essential features responsible for Böhler's success are:

1. Accurate reduction.
2. Complete immobilization of the fractured fragments by non-padded plaster splints until union has occurred.
3. Natural use of the injured part—for example, weight-bearing where possible—from the beginning.

Considerable experience in fracture work is necessary for the assurance of uniformly good results and the avoidance of risks in the early stages, when much swelling is present.

[1] *Injuries of Athletes*, by R. Salisbury Woods; *Modern Treatment*, vol. ii, edited by C. P. G. Wakeley.

When revisiting Mr. K. H. Pridie's fracture clinic at Bristol recently, I was fortunate enough to see a pregnant woman brought in at full term from a street accident with comminuted fractures of the tibia and fibula. She refused admission as she was anxious to return to her own accoucheur at Cheddar. The fractures were forthwith reduced, immobilized by suitable light plaster-of-Paris splinting, the toes being free to move; and she was sent home in comfort for her imminent confinement. Contrast this with the agony and clumsy impediment of the old "back splint and foot-piece," which would have allowed considerable movement of the fragments in the course of labour.

As another graphic instance, mention may be made of a 12-stone Cambridge resident, aged 29, who broke her leg by torsion while skating last February.

There were six oblique spiral fragments in the middle third of the tibia, one piercing the skin and causing external haemorrhage; the fibula was also fractured in its upper third. The skin edges were excised under novocain, and "primary suture" carried out. The fractures were reduced by manual traction, and the leg was "put up" in a non-padded plaster splint with a "window" for the wound. The latter healed by first intention, but the position of the fragments was imperfect, and, moreover, it was desirable to make ambulatory treatment possible. Therefore, under a general anaesthetic the leg was suspended in a Böhler extension frame, and traction up to 45 lb. exerted from an ice-tong calliper gripping the os calcis. Two stout transfixion pins were then bored through the tibia just above the ankle-joint and below the tibial tubercle respectively, and left with their ends projecting. The traction (and thereby the reposition of the fragments) being maintained, the limb was now stoutly encased in a non-padded plaster splint in the ordinary way, from the sole to the mid-thigh. The pins were thus embedded in an irregular cylinder of rigid plaster, which made approximation and "telescoping" of the oblique fragments impossible. A walking stirrup was applied, and *two days later the patient bore weight and walked three times round her bed with sticks.* In four days she was able to walk about thirty yards thrice daily, and she left the nursing home in six days. Meanwhile, she had been made to move her toes, to contract her quadriceps femoris, and to carry out "rowing exercises" regularly. She never used crutches at all. The splint and pins were removed after eight weeks, and an ordinary plaster splint was reapplied for a further fortnight, during which time she was walking about two miles a day. When this splint was finally removed and an "Elastoplast" "puttee" substituted she walked with confidence, no pain, and no *oedema*. Moreover, she has full, free, and painless movement of the knee-joints and ankle-joints, and, of course, no shortening.

It may fairly be claimed that Böhler's principles saved her about ten weeks in bed, an incalculable degree of disuse atrophy of her muscles, prolonged sick wastage and tedious training back to proper strength, and a staggering bill for months of massage, which her own function obviated almost entirely, for oedema disappeared in a few days on carrying the "Elastoplast" "puttee" well above the knee.

It is also probable that the essential object of any treatment—namely, a perfect result—would not have been achieved in a limb so severely injured except by using Böhler's technique of screw traction and absolute retention of the accurately reduced fragments.

Permanent Disability

Anyone interested in fracture work must be appalled from time to time by the cases he sees in which the fragments have never been properly reduced, and where after prolonged disuse and long-continued massage a high percentage of permanent disability results.

The following is perhaps an extreme, but is nevertheless a true example of a report upon a man who had sustained comminuted fractures of the tibia and fibula.

Although an "open" fracture of the tibia, it had been fixed with a steel band and silver wire, with the inevitable result that osteomyelitis was established, and profuse discharge persisted long after a second operation for the removal of these foreign bodies. The limb had originally been fixed in plaster, more or less after the fashion of Böhler, but secondary haemorrhage had necessitated a hurried return to the theatre, where the plaster had been removed; the patient was then returned to the ward in a Thomas splint, with less complete control of the fragments. Some weeks later another surgeon operated in the presence of (?laudable) pus, hoping to fix the shaft by an intramedullary peg; this failed to help. Later on, with a large granulating wound and a discharging sinus, the man was readmitted for a severe attack of erysipelas, ran a high temperature, and became very ill. In short, *after eighteen months he has non-union of the tibia*, the opposed fragments being now cone-shaped, separated by over a centimetre, and held rigidly apart by the unaffected fibula; pus is still discharging from a sinus, and naturally he has not yet borne weight on the injured limb. The knee-joint has been immobile for one and a half years. The prognosis is none too good, for if we reject the idea of immediate amputation, he is faced with a long "sentence" while sepsis subsides before any further operation could be safely undertaken to square off the conical "stumps" and adjust the length of the fibula to that of the shortened tibia. If there is no "flare-up" there would still be a further period of prolonged immobilization while delayed union is awaited. Finally, the limb would have to be trained up to weight-bearing—in all, a matter of about a year or two from now—and then he would have a limb markedly impaired by shortening, and by a knee fixed in extension.

This unfortunate case contrasts extremely with the modern teaching and results of Lorenz Böhler, whereby the man would have returned to work in as many months as actually in years, and with *no* permanent disability.

Conclusion

It may well be emphasized that the introduction of internal splints, such as plates and screws, bands, etc., has been rendered almost entirely obsolete nowadays. With very few exceptions such foreign bodies are indicated only in fractures of the olecranon with separation, and in the view of some, in fractures of the patella. It has always been thought bad to "plate" open fractures.

Apart from contraindicated operations upon fractures, which are happily becoming more rare, an enormous amount of avoidable sick wastage still occurs from failure to effect accurate reduction before the limb is immobilized. Where there is overlapping and bad alignment of the bones it must be remembered that there is also kinking and distortion of the blood vessels and channels of venous and lymphatic return; and this is responsible for the marked oedema which persists so long, and for which an indefinite amount of massage has to be ordered. Faulty position, such as recurvation of the tibia, should be obvious, and there is really little excuse for allowing it to go uncorrected; but of course the "good old-fashioned" back splint and foot-piece, upon which most of us were brought up, encourages backward sagging, just as the Thomas splint is liable to allow this to happen in the case of a fracture of the middle third of the femur unless an upward—that is, anterior—pull is exerted from an axial bar above.

It is therefore important to emphasize Böhler's conclusion that it is not enough to *obtain* correct alignment; it must be secured by complete control until union is complete.

In the care of severe injuries, whether of bones or joints, it is still insufficiently realized that unnecessary sick wastage and lasting disabilities result from delayed or obsolete treatment. Though less dramatic in point of immediate danger, they may be considered as much a "surgical emergency" as the acute abdomen.

THE INCIDENCE OF MONILETHRIX

BY

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Typical monilethrix is a rare affection, but it is not improbable that cases presenting less diagnostic features may be more frequent than is generally believed, as the following familial group might suggest.

On June 28th, 1935, I saw three patients affected with this disease belonging to a family of ten persons. Subsequently I saw five other members of the family. Of the total number seen, four males and four females—two of the latter were twins—seven had the disease; the unaffected member was the mother. The condition had evidently originated paternally. There was a very suggestive history on the male side of the family—the paternal grandfather, the paternal grand-uncle, and two paternal uncles had or have scanty hair or are bald. This family is not related to the two families previously reported by me in the *Journal* (December 3rd, 1932, p. 1009; and March 16th, 1935, p. 526). The grandfather, a tailor, appears to have been born in Argyllshire. The father and one of his brothers are miners, while a second brother is a plasterer; they were born in Glasgow. The following is a brief history of the affected members.

History of Affected Persons

1. Father, aged 57, miner; born in Glasgow. At 17 years of age his hair began to fall. The hairs microscopically examined show very rare swellings.

2. Daughter, aged 20. Her hair up to about the age of 12 years was very thin at the back. In front and at the sides "it stood out; it would not lie down." Oil was rubbed into the scalp and hair growth improved. Fusiform nodes are present. Twisting of the hair at the atrophic portions is noticed microscopically, doubtless causing the spiral appearance detected in some hairs; brushing might have contributed to this phenomenon. Fracture is observed not only internodally but in some instances of the node itself. The latter is a definitely atypical feature. Short nodes with abrupt borders are also seen—two in close juxtaposition with slightly diminished pigmentation and corresponding increase in internodal area were observed. Marked longitudinal splitting of the hair is noticed in various parts of the shaft which I cannot recall ever having seen in hairs of either of the groups previously reported. Externally the eyebrows are thin. Many freckles are present.

3. Son, aged 18. In this patient the nodes are short, and in some of them diminution of pigment is detected.

4. Son, aged 13. The nodes are short and the spindles not well defined.

5. Son, aged 10. The nodes are of smaller diameter.

6. Daughter, aged 5, a twin. Her hair is very fine; it is short at the back and in a restricted frontal region. It tends "not to lie down." There are many short nodes; longer ones are also seen but not well defined. Spiral hairs are very frequent, and longitudinal fissuring of the shaft is present. The eyebrows are thin externally. A very few lichen pilaris lesions are present in the suboccipital region. There is naevus araneus of the right side of the nose.

7. Daughter, aged 5, a twin. Her hair is fine; posteriorly short, anteriorly slightly so. It tends "not to lie down." Fusiform nodes and also short nodes are present. Her eyebrows are thin externally. There are verrucae planae on the right half of the forehead.

Some Modifications and Variations

It will be seen that in this group there is definite variation in the degree of development of the nodes. In the father's case they are more of the nature of very rare

swellings of the shaft. Again, in addition to fusiform nodes, some of which are relatively thin, short nodes occur. A feature, definitely atypical, hitherto unobserved by me in monilethrix, is occasional rupture at the node. An equally abnormal feature is the longitudinal fissuring of the shaft, involving the nodes, also the partial fracture of the hair—that is, not involving the whole diameter.

Another modification, noticed in an adult and to a less degree in a child of 5 years, is the presence of spiral hairs, possibly due to thinning of the shaft and vigorous brushing. It will be recalled that in three females the eyebrows are thin externally. One of these, an adult, states that up to the age of about 12 years her hair "stood out, would not lie down" (the same condition exists in the twins), and at that age oil was rubbed in and growth of the hair improved. This improvement was due in all probability to increased sebaceous gland activity, an accompaniment of the onset of puberty, a phase to which I have alluded in both previous contributions as possibly favourably affecting hair growth. The occasional fracture of the nodes and longitudinal splitting of the hair shaft naturally involve a consideration of the possible coexistence of trichorrhexis nodosa and fragilitas crinium. I regard the former feature as an exception due to extreme brittleness of hair which the occasional longitudinal splitting of the shaft supports. An arresting feature was the absence from the scalp, except in one patient, of lichen pilaris.

In conclusion, this group of cases, although placed in the category of monilethrix, certainly includes more than one unusual feature, and would suggest, as previously advanced, the possible existence of similar groups exhibiting more or less variation from type and consequently more liable to escape detection.

Clinical Memoranda

Ergometrine: The Possibility of Idiosyncrasy

Since ergometrine was made available to the medical profession in April, 1935, this new drug has been used very extensively in obstetrical practice, and in many large maternity hospitals it is given routinely to all patients after labour. Thus far no unfavourable side effects have been recorded; indeed, it is one of the characteristics of the alkaloid that the useful clinical effect is elicited by doses far short of the toxic dose. The drug has also been given to seriously shocked patients without any harmful effect on the general condition (*British Medical Journal*, October 24th, 1936, p. 799). Recently, however, three reports have come to hand—two from one practitioner—which suggest that on rare occasions a patient may show an unusual reaction to the drug.

In one case, following an abortion at the ninth week of gestation, 0.5 mg. of ergometrine was injected intramuscularly. Within five minutes the patient complained of a pressure in the epigastrium, became nauseated, and vomited violently. A severe headache quickly developed, and a sensation of pressure spread over the body. The patient felt too weak to move, and for a time she had a sensation that she was going to die. After twenty minutes the symptoms subsided, but the feeling of weakness persisted for some hours.

The second case—also one of abortion—was complicated by severe bleeding which necessitated intrauterine manipulation. In this case, following injection of 0.5 mg. of the drug, the patient experienced a sense of constriction across the chest, together with difficulty in breathing: there was a sensation of impending death. The symptoms disappeared after about thirty minutes.

The third case was again one of abortion. In this instance ergometrine was given orally. Symptoms of faintness developed, but were not of great severity, although for a time the patient's face was grey and covered with sweat.

These records raise the question of the possibility of a rare idiosyncrasy to ergometrine. On the evidence available a decision on this matter is scarcely possible. It may be significant that in each of the three cases in which administration of the drug was associated with unfavourable symptoms the patient was suffering from severe bleeding accompanying the abortion of an early pregnancy. In at least one of the cases there was also some intrauterine manipulation, which may have been responsible for symptoms of shock, and which may have determined the unusual effect of the drug. Thus far there is no record of harmful symptoms following the administration of ergometrine after labour, which is the main use of the drug. Occasionally a patient may complain of severe "after-pains," but these are not of serious consequence, and in such cases the drug, if repeated, should be reduced in dose. In any event, the oral dose for repeated administration should never exceed 0.5 mg.

It is important that with the introduction of a new drug full information should be gathered regarding its action in different circumstances. It is the object of this note to suggest that should other examples of unusual response to ergometrine occur they be duly recorded.

British Post-Graduate Medical School, W. CHASSAR MOIR.

A Case of Mastoiditis

Unusual cases of mastoiditis are not uncommon. Perhaps the following note may be of interest to some readers.

A man aged 48, while on holiday, developed an acute suppurative otitis media on the right side, for which a paracentesis was done. When I saw him on July 15th his tympanic membrane was injected—bulging slightly posteriorly and with only a slight muco-purulent discharge through the paracentesis incision. There was no mastoid tenderness, the temperature was normal, but the patient did not feel well, and the pulse rate was increased. Owing to the scantiness of the discharge, the slight bulging of the drum, and no improvement in the patient's condition, the drum was reincised with the object of promoting freer drainage. The patient's condition improved considerably, but still, after six weeks from the time of onset, in spite of treatment, the drum did not return to normal; it remained injected, particularly in Shrapnell's membrane and the posterior part of the membrana tensa. The patient complained that "he did not feel right, as if there were a fuzziness in his head, and inability to concentrate." There was no mastoid tenderness, swelling, or oedema, the temperature was normal, and the pulse rate 84.

At operation was found an infected tract leading from the mastoid antrum to a small abscess cavity near the tip of the mastoid process; the pus was well formed and under pressure, and separated from the sinus only by a thin sheath of bone.

One is reminded of the old saying that the drum is the window to the ear, and that failure of inflammation to subside in five weeks after an acute infection is significant. Again, the pulse rate is often more important than the temperature. Also the patient's story should not be lost sight of.

We all know that infection selects sometimes the attic in preference to the atrium, perhaps because of its greater amount of connective tissue, or its folds of mucous membrane make a suitable nidus, from which infection readily passes back to the antrum, without causing such a distorted picture on otoscopic examination as when the atrium is primarily involved.

Southampton. ALEX. RUSSELL.

Reviews

DISEASES OF THE LIVER AND KIDNEYS

It has long been recognized that the liver and kidneys, the largest glands in the body, bear the brunt of the toxic effects of every serious malady, and thus contribute to a greater or less extent to the morbid symptoms. Dr. JEAN VAGUE has collected in one grouping[1] those conditions in which affections of the liver and kidneys may be observed. The outstanding example of Weil's disease, recognized clinically long before the discovery of the causative leptospira, may be taken as a type of what the author describes as "acute hepatonephritis." The association of jaundice, urobilinuria, and haemorrhages, whether from nose, gums, kidney, gastro-intestinal tract, or into the subcutaneous tissues, with toxic symptoms arising from deficient renal or hepatic function, is a syndrome for the production of which—as Sir William Willcox pointed out in his Lumleian lectures on toxic jaundice in 1931—many poisons and infections may be responsible. The most violent of the poisons are phosphorus and mercury; lead and gold, fungi, atophan, apiol, trypaflavine, picric acid, trinitrotoluene, dinitrobenzol, pyrocatechin, tetrachlorethane, and carbon tetrachloride are others which have caused severe and often fatal illness. The infectious aetiological group includes anaerobic infection (*B. perfringens*), *B. funduliformis* (throat), pneumococci, streptococci or staphylococci, the typhoid-paratyphoid group, the leptospira of Inada and Ido, the virus of yellow fever, and malaria. In other instances there may be combined toxic and infective factors, as in the "hepatonephritis" following syphilis and its treatment with arsenical remedies; in post-operative cases whether from infection or the effects of the anaesthetic administered; after abortion; and in the severe jaundice of newborn children.

Anatomically it would be simple to ascertain at necropsy the lesions affecting principally or only the liver and kidneys to ensure a diagnosis of hepatonephritis, but many of these patients may recover and in others these organs may be only partially affected. There is the difficulty, too, that the natural reserves of glandular tissue may prevent the appearance of gross defect in tests designed to assess the renal or hepatic efficiency. There seems thus to be at the outset no clear delimitation of this group of complaints, and the author finds that experimentally it is difficult to produce in an animal a syndrome analogous to that which is observed in the clinic. Different species show differences of susceptibility, and in most animals (except dogs, perhaps) the outstanding features of jaundice and haemorrhages are only rarely seen. In most of the experimental work, too, the main interest has been centred on one organ only, to the neglect of the rest of the body. The features of uranium nephritis, both anatomically and physiologically, have been studied carefully, but the concomitant hepatitis has not received much attention. Dr. Vague has collected from the literature the main characteristics of the lesions caused by various toxins in animals, and has found that apiol and diphtheria toxin produce lesions which most resemble those obtained in the human subject. These may be hyperplastic, degenerative, or necrotic; but the cellular irritation and degeneration are merely the beginning and the end of the same toxic process, whether occasioned by poison or by infection. The evolution depends more on the strength of the attack on the organism and on the reaction of the latter than on the causal agent itself. In most cases three stages are noted—an initial general reaction without localization of the poison or infective agent, followed by symptoms referable to the liver and later the kidneys. The kidney is almost always attacked after the liver. This course is seen characteristically in Weil's disease, which is by no means rare in Great Britain amongst sewer workers and miners, as recent reports show; it has been ascribed also to bathing in infected water, and world-wide statistics show that its frequency is increasing. In such disturbances of the main metabolic glands it is important in treatment to avoid overworking the injured organs. Simple carbohydrates are the best foodstuffs. Bleeding and purgation, the classical remedies for uraemia, are to be used, but with discretion, and lumbar puncture may be tried for the relief of nervous symptoms. Diuretics and cholagogues are indicated; some success has followed renal decapsulation in severe cases. Specific treatment is not usually possible, but in Weil's disease anti-leptospiral serum or convalescent serum may be given intravenously.

[1] *Les Hépatonéphrites Aiguës. Etude Clinique, Anatomique et Expérimentale.* By Jean Vague. Paris: Masson et Cie. 1936. (Pp. 640; 42 figures; 70 fr.)

DISEASES OF THE AIR AND FOOD PASSAGES OF FOREIGN-BODY ORIGIN

The indefatigable Dr. CHEVALIER JACKSON, with the collaboration of his son, has brought out a fresh volume[2] on the lines of the original *Peroral and Endolaryngeal Surgery* published in 1915, but now dealing only with foreign bodies. Since those days the number of cases of this kind which have passed through the clinic of Dr. Jackson has been approximately quadrupled, but it appears that twenty years ago the principles of diagnosis and treatment had been so thoroughly mastered that but little of essential importance has been added since, whilst knowledge of further advances has been kept up to date in the recurring editions of *Bronchoscopy, Oesophagoscopy, and Gastroscopy*, and in *Foreign Body in Air and Food Passages* from the *Annals of Roentgenology*, vol. xvi, published in 1934 by the same authors. The latter book gives in some respects an even more satisfying account of the subject than the new book now presented, though probably the authors would regard it as a supplementary and elaborate study in radiology. There is, however, in the latest book a fresh analysis, based on enormous statistics, of the aetiology and of the factors which induce some types of foreign body to enter the air passages and others to become impacted in the alimentary tract.

This study in the aetiology both of entry and of lodgement is of extraordinary interest on account of the immense variety of the material available for study, so that it provides a completeness and elaboration of detail which is unlikely to be repeated in a single clinic. Most of the technical equipment, which is fully illustrated, is already familiar, but there are three fine coloured plates, in the characteristic style of Dr. Jackson, of the bronchoscopic appearances shown by foreign bodies. There is one fresh problem which has evidently arisen in America as well as on this side of the Atlantic in recent years. The bobette pin passes easily into the stomach and through the pylorus, but it is too long to take the turns of the duodenum, where it is liable to become jammed in a dangerous situation. Gastroscopic removal is therefore indicated and recommended, but there is very little information to be found on the technique of this proceeding, nor is there any mention of the ingenious instrument, devised by Dr. Gabriel Tucker, a former assistant and colleague of Dr. Jackson, by means of which a foreign

[2] *Diseases of the Air and Food Passages of Foreign-Body Origin.* By Chevalier Jackson, M.D., Sc.D., F.A.C.S., LL.D., and Chevalier L. Jackson, A.B., M.D., M.Sc.(Med.), F.A.C.S. Philadelphia and London: W. B. Saunders Company. 1936. (Pp. 636; 2,000 figures, including 3 coloured plates. 52s. 6d. net.)

body can be removed from the stomach of a small child through the oesophagus and mouth.

One-half of the pages—but owing to the special paper used two-thirds of the bulk—of this volume is given up to an illustrated and classified tabulation of foreign bodies with data relating to their removal. Dr. Jackson hopes that in case of difficulty it will be possible to solve the problem by reference to the table where an illustration of a foreign body of the same nature, size, and shape, with a similar location and sojourn in a patient of a similar age will be found, together with notes on the tube used, the method of extraction, and the solution of the mechanical difficulties. This complete work of Dr. Jackson must therefore be available in every clinic where endoscopy is employed if the experience which he has gained is to be utilized fully and avoidable disasters arising from insufficient experience are to be eliminated.

SMALL HAEMATOLOGICAL ATLAS

Clinical pathologists will be grateful to Miss LYDIA SCHUDEL for her *Leitfaden der Blutmorphologie*,[3] a collection of beautiful plates illustrating in so realistic a manner the appearances of blood cells seen in stained smears. The author is an assistant in Professor Otto Naegeli's laboratory at Zurich, and the pictures and explanations are those expressed in *Blutkrankheiten und Blutdiagnosis*, Naegeli's well-known classic of haematology, the fifth edition of which was published in 1931. This little book is sponsored in a graceful preface by Professor Naegeli. It is given in German, English, and French, and should therefore command a wide range of readers to whom it will be a useful guide, especially to students and to those not practised in the interpretation of blood films. The method of preparing smears on cover slips has in this country been commonly superseded by direct films on micro-slides, and many workers prefer the more rapid and simpler staining with Jenner stain. The standards set out on page 15 are not all now generally accepted; it is known that the mean red cell count for healthy men is about 5.5 millions per c.mm., and the haemoglobin percentage is correspondingly higher, about 105 per cent.; and in the United States of America even higher figures prevail. The publishers are to be congratulated on the excellent reproductions of the plates.

DELAFIELD AND PRUDDEN'S PATHOLOGY

The sixteenth edition of *Delafield and Prudden's Text Book of Pathology*[4] may be described as a jubilee publication, since this work first appeared in 1885. In the introduction to this edition Dr. FRANCIS CARTER WOOD, who is now responsible for the revised text, gives some interesting details of the original authors. Delafield was a practising physician, but also an expert microscopist, and well grounded in morbid anatomy. His name has been preserved to this generation chiefly as the discoverer of the stain with which all pathologists are familiar. Prudden was a bacteriologist who had worked under Koch shortly after the discovery of the tubercle bacillus. The book which these two men wrote must have satisfied a need, for it has remained a popular textbook for students for fifty years.

To reflect on such a venerable record makes one hesitate to offer criticisms, but none the less it must be obvious to all who handle this volume that it has now reached its limit in size and weight. It also needs judicious pruning, particularly with regard to reference to work published twenty or thirty years ago. Some important new conceptions, such as fat necrosis, receive very scanty mention (page 1024). The renumbering of the illustrations has given opportunities for misprints such as occurs in the legend for Fig. 539 on page 837. It is to be hoped that students at their examinations have not paid the penalty to which they would be exposed if they quoted the surprising remark which was found on page 833: that liver abscesses "may be due to the presence of amoeba coli."

THE TRAINING OF NURSES

Modern Professional Nursing[5] is a work in four volumes which include no fewer than 1,308 pages. These four volumes are intended to be "a complete compendium of knowledge based on the Syllabus of Subjects for Examination for the certificate of general nursing of the General Nursing Council." The author is Dr. DOUGLAS HAY SCOTT. It may be admitted at once and without qualification that he has shown himself to be a most industrious compiler of medical information. Whether or not his labour is for good is a matter for inquiry, and it is one of undeniable importance. There has been an outcry in the lay press of recent months against the excessive hours of duty of nurses and probationers in hospitals and kindred institutions. The alleged excess lay with the physical side of the work of the nurses. There could be no doubt that the facts published justified the outcry. These four volumes may indicate another justification for this protest. The hours of the nurses are long, the physical labour heavy; now we find that the mental and technical education of the nurse is heavy also—if it be true that the syllabus of the General Nursing Council is properly met by these four volumes.

The first volume deals with anatomy and physiology. It covers an immense amount of anatomical details, including such abstruse subjects as the anatomy of the brain, its surface regions and nerve paths; the tracts of the spinal cord; and diagrammatic representations of the four plexuses (brachial, etc.). All this anatomical and physiological detail is to be "learned" by the nurse, and without a body, or dissection, or test tube. What sort of training can this be? Volume ii deals with hygiene in similar detail, with hygiene and the theory of nursing. The former would make a useful summary of the work of a medical officer of health, and might serve to inform a member of a public health committee of a statutory authority; but how the duties of a nurse can include knowledge of a modern milk-pasteurizing plant we fail to understand. The part on nursing is good and really to the point, except for such irrelevancies as "special states of unconsciousness." Nursing extends to volumes iii and iv. In both, the strictly nursing parts are good, but there are large parts covering the causes, diagnosis, and treatments of maladies that are utterly irrelevant to the nurse's duties. What has the nurse to do with the diagnosis of aneurysm and the reading of notoriously difficult *x*-ray films? What has she to do with the physical signs, pathology, and treatment of retinitis, glaucoma, or cataract? Or what purpose does it serve to attempt to tell the budding nurse all about ectopic pregnancy? If these excrescences were occasional the author might be forgiven, but they characterize the whole of the four volumes. He seems to have tried to combine the statement of his own medical knowledge and an abstract of medical information with real nursing technique. This he justifies apparently by the suggestion that it is indi-

[3] *Leitfaden der Blutmorphologie*. By Lydia Schudel. Leipzig: Georg Thieme. 1936. (Pp. 45; 13 coloured plates. RM. 6.80.)

[4] *Delafield and Prudden's Text Book of Pathology*. Revised by Francis Carter Wood, M.D. Sixteenth edition. London: Baillière, Tindall and Cox. (Pp. 1,404; 840 figures. 45s.)

[5] *Modern Professional Nursing*. By Douglas Hay Scott, M.B., Ch.B. London: The Caxton Publishing Company Ltd. 1936. Four volumes. (£4 4s. the set.)

cated by the syllabus of the General Nursing Council. We have a copy of that syllabus at hand. The claim does not appear to hold good—unless, indeed, a reference to anatomy means the whole of anatomy, and so on. Clearly this cannot have been intended, else there would be provision in the training for practical instruction in such subjects, whereas there is none. It is a pity Dr. Hay Scott has spoiled what might have been a good book.

FAVOURITE PRESCRIPTIONS

The art of prescribing in the shape of an *ex tempore* formula to meet the necessities of the individual patient has admittedly in recent years lost something of its former glory. A volume of *Favourite Prescriptions*,[6] edited by Sir HUMPHRY ROLLESTON and Dr. ALAN MONCRIEFF, may perhaps be regarded as an attempt to revive what in an earlier day was almost a universal practice. The prescriptions are collected from the pharmacopoeias of eighteen hospitals, the author in each case being a member of the present hospital staff. Inevitably, tradition and convention and convenience, rather than pharmacological science, exercise a large influence in the selection of the various formulas, and not a few of these are frankly recognized as having no virtue other than that of the classical placebo. None the less, both in this direction and in the direction of more active values the book provides practical suggestions which may well be of service to the junior prescriber and may help also to protect him against the ready-made prescription that is so ingeniously thrust on his attention by the arts of the advertising manufacturer. The writers of the various chapters have not been unsuccessful in lending some measure of interest to their comments on the pharmacopoeias in which they are respectively interested. Occasional historical allusions, personal experiences, therapeutic hints, and even a slight spice of malice, do something to brighten what at first sight might readily be regarded as a mass of fine confused prescribing.

Notes on Books

Twenty-five years ago Mr. C. L. LEIPOLDT wrote a book on *Common-sense Dietetics* which was reviewed in these columns (February 17th, 1912, p. 374), and he has now resuscitated it under the not very attractive title of *The Belly Book*.[7] We are told in the preface that it was the earlier chapters of the original work, dealing with the principles of dietetics, that most needed revision, whilst the later ones, devoted chiefly to the "art of dining," required comparatively little modification. This may explain the use of the term "protein" in the first part of the book, whilst the older term "proteid" is still employed, though not uniformly, elsewhere. Even in the earlier chapters, however, revision has been by no means complete, for whilst an account of the vitamins is now given, the analyses of foods and the examples of standard diets are not taken from the latest sources. Nor have some of the misprints to which attention was called in our review of the original edition been corrected. One meets, too, with some surprising statements: for example, "calcium we get from meat and cereals chiefly"; in hot weather protein should form "the staple ingredient of the dietary," and "the food should be selected from those articles of diet which have a relatively high heat value" (p. 65). Alcohol and gelatin, we are told, are not foods, whilst eggs are "somewhat deficient in carbohydrate"—surely a masterpiece of understatement. The amount of caffeine in a "moderate-sized cup" of coffee is said to be four grains, which is more than twice the amount found by analysis in a teacupful of black coffee. Such statements as these shake one's faith in this book as a safe guide to dietetic principles. The best chapter is that on the preparation of food, although no mention is made in it of the recent work of McCance on the effects of cooking on meat. The chapter on diet and disease, on the other hand, is useless both to the doctor and to the layman, and abounds in statements for which there is no scientific justification.

In the work entitled *Vagabond Minstrel*[8] Mr. THOMAS BURKE, the well-known author of *Limehouse Nights*, has, as the subtitle indicates, described the adventures of his fellow-countryman Thomas Dermody, the long-forgotten poet, who died at an early age at Sydenham in 1802. The work will appeal to the medical reader, and especially the psychologist, as an admirable study of a brilliant but unstable youth, the subject of chronic alcoholism and pulmonary tuberculosis, who baffled all the attempts of his friends in Dublin and London to reclaim him from a life of destitution.

Little more than a year has elapsed since the second edition of a *Short Practice of Surgery*,[9] by HAMILTON BAILEY and MCNEILL LOVE, was published, and already it has been found necessary to bring out a third edition. Although the interval has been so short, so rapidly does the science of surgery progress that the authors have had to make deletions and additions in nearly all the chapters. The illustrations as heretofore remain a very special feature of the work, and thirty-two fresh figures are included in this edition. This is obviously a very popular book among those for whom it has been written, and deservedly so, for even the most critical could reasonably desire no more as regards text, illustrations, printing, binding, and general make-up.

[6] *Favourite Prescriptions*. Edited by Sir Humphry Rolleston, Bt., G.C.V.O., K.C.B., M.D., F.R.C.P., and Alan A. Moncrieff, M.D., F.R.C.P. "The Practitioner" Handbooks. London: Eyre and Spottiswoode (Publishers) Ltd. 1936. (Pp. 227. 10s. 6d. net.)

[7] *The Belly Book or Diner's Guide*. By C. Louis Leipoldt, F.R.C.S., D.Litt. London: Williams and Norgate Ltd. 1936. (Pp. 298. 7s. 6d. net.)

[8] *Vagabond Minstrel. The Adventures of Thomas Dermody*. By Thomas Burke. London: Longmans, Green and Co. 1936. (Pp. 345. 7s. 6d. net.)

[9] *A Short Practice of Surgery*. By Hamilton Bailey, F.R.C.S., and R. J. McNeill Love, M.S., F.R.C.S. Third edition. London: H. K. Lewis and Co. Ltd. 1936. (Pp. 996; 763 figures, 88 coloured. 28s. net.)

Preparations and Appliances

TEST FOR HEAT STERILIZATION

Sterilizer control tubes (patented) are small stout sealed glass tubes containing a liquid which gradually changes colour when exposed to a high temperature; the higher the temperature the faster the colour change. The colours have been so adjusted that the change conforms to accepted motoring standards. The liquid in the tube is first red, and remains so on heating up to 100° C.; the colour turns yellow when the material which is being sterilized has reached the stage where it is still not quite safe; and finally turns green at 115° C., when sterilization is complete. The idea is not new, but the colours are, and the tubes may be useful in any sterilization plant where the apparatus and methods of using it or the reliability of the personnel are under suspicion. The price of the tubes is 3s. a dozen, and they may be obtained from Messrs. Albert Browne, Ltd., Chancery Street, Leicester.

GRANULAR LIVER EXTRACT AND IRON

Hepferol (manufactured by A/S Serpens, Copenhagen, and distributed in this country by Messrs. Coates and Cooper) is a granular preparation containing liver extract and iron. The makers state that 100 grams of the preparation are equivalent to 35 oz. of fresh liver and contain 5 grams of iron. It is known that many cases of pernicious anaemia are benefited when liver therapy is supplemented by iron, and this preparation provides the two agents together.

"SALVACID"

Salvacid (manufactured by the Tres Corporation, Budapest; vendors, Coates and Cooper, Ltd.) is stated to be composed of ox-bile derivatives combined with the antispasmodic principle of sage and parathyroid extract supported by very mild doses of alkalis. It is recommended for the treatment of gastric and duodenal ulcer.

A PLEA FOR A NATIONAL BLOOD TRANSFUSION CONFERENCE

BY

P. L. OLIVER, O.B.E.

FOUNDER AND HONORARY SECRETARY, BRITISH RED CROSS BLOOD TRANSFUSION SERVICE

The paper read by Mr. Denis Browne at the recent Oxford meeting of the British Medical Association, and the discussion which followed, have impelled me to proffer some comments and a suggestion. I do so with all diffidence as a layman, but perhaps I may venture to describe myself as an intelligent layman with a certain amount of experience of blood transfusion from an unusual angle.

Mr. Denis Browne said that he could imagine a Utopia where blood transfusion could be obtained rapidly in any part of the country. Why is the suggestion Utopian? In London and in most of the great cities it is practically achieved, and only minor difficulties prevent its general adoption. Not a week passes without my receiving at least two letters asking for guidance in forming a new service somewhere in the provinces.

Varying Technique and Conditions

One problem is the variation in technique and conditions that exist in different localities. Mr. Denis Browne urged that the technical problems should be studied and the best method standardized, and I am strongly in favour of this. Even in London, where a certain amount of standardization of conditions has been obtained, considerable divergencies of practice exist, some of which tend to alienate or deter a voluntary donor, whilst in the provinces the most conflicting principles obtain in different areas.

Thus when a member of the London Service removes from the metropolis and joins a local service or panel he occasionally finds some method or condition in operation that antagonizes him and causes him to cease his donations. For example, it took us quite five years to abolish the practice of cutting down upon a donor's veins, and although I was told repeatedly that it was impossible to avoid this in varying percentages of cases, ranging from 10 to 60 according to the informant, we have only had six such cases in the past six years, each by a colonial or provincial surgeon who had not been made aware of our regulations. Yet it is still extensively practised outside London.

Another suggestion by the speaker was the provision of specially trained men for the operation. Here again I decidedly concur. It is not only a case of the convenience of the donor, but the well-being of the patient.

I recall a case this summer when a surgeon failed utterly to obtain any blood from a donor whose veins had been classed by our medical officer as "good." She had served quite satisfactorily on three previous occasions, but at this hospital the surgeon had been unable to obtain blood from either her arms or legs (*sic*). During the following night I received another call from the hospital and learned that the same surgeon would operate. The obvious donor lived quite near the hospital, but his veins were only recorded as "fair." In view of the afternoon's experience I did not feel justified in sending for him, and had to go much further afield, entailing a delay of nearly an hour, and in the meantime the patient succumbed.

It is not unusual for a donor with a large number of transfusions to his credit to be reported to us as quite unsuitable for future donations, but who has since served repeatedly without difficulty. Some of our most successful operators inform me that they practise regularly in a V.D. clinic, and this would suggest a method of gaining deftness in inserting the needle.

The conviction has been growing upon me for some while that the time is ripe for an effort to be made to pool the knowledge and experience gained since the war and formulate a model set of recommendations for both operative technique and administration of blood transfusion services. From the experience of over 20,000 transfusions we have evolved certain conditions which we enforce, and others which we recommend, and these have met with success and practically general approval. We have the advantage of having been able to survey the whole field from the point of view of the donors, some thousands of whom have been practically continuously under the supervision of our medical officer, but most writers on the subject have necessarily gained most of their experience and information as ancillary to the treatment of their patients.

Problems for Consideration

I would suggest that steps should be taken to convene a conference in London of all persons interested in blood transfusion, technical and administrative, and that this should be open to general discussion, without set agenda, of the subject in all its aspects. At the end a committee should be appointed to co-ordinate the views and opinions expressed and endeavour to frame a series of recommendations covering the entire subject. These could be circulated to all hospitals and blood transfusion services in the country as a basis. A year later the conference might be re-summoned to consider the replies and the results of the year's experience where the recommendations had been adopted. Personally I should like to see an annual conference established, as is the practice in many European countries. It may be recalled that the organizers of last year's International Blood Transfusion Congress at Rome were unable to discover any body in this country that could be said to represent the movement in its entirety, and accordingly requested the British Red Cross Society to send delegates. An interchange of views with foreign nations would be of obvious advantage to this country.

Among the problems for consideration I would mention the following:

Whole versus Citrated Blood.—There is so much difference of opinion on this point that a technical discussion is clearly needed in the hope of arriving at a decision.

Cross-grouping of Donor Against Patient.—We consider this a *sine qua non*, yet a great many London hospitals rarely or never carry it out. During the past eight months seventy-eight donors have been found to be incompatible against patients of their own group. This has been found especially prevalent in Group I (Moss). I belong to this group, and have been found incompatible in twenty-two cases out of forty-four, but I have frequently been told that it was unnecessary to cross-test, as my patient was a "universal recipient."

Universal Donors.—It would be difficult to compute the number of cases of grave reaction, sometimes terminating fatally, caused by belief in this convenient group. Yet it is still prevalent, and many Press appeals for donors still explain that less than half those applying will be enrolled, as comparatively few possess the type of blood required. There are two reasons for this, apart from those rare cases where there is not even time to spare to group the patient. These are absence of a pathologist and lack of sera. Grouping is so elementary a process that in London we do not accept the first as an excuse, considering that there should always be an official available who is competent to carry this out. One of the causes of lack of sera has been the high commercial cost of this material, but the British Red Cross Society has recently been successful in standardizing the production of a very high-titred serum at a reduction of 75 per cent. in price, with a special further reduction of 50 per cent. to hospitals affiliated to the London Service.

Time of Cross Test.—If carried out this test varies in time at different institutions from two and a half to forty-five minutes. A donor who has usually been passed as satisfactory in the former time naturally objects if occasionally detained for what he considers an unreasonable period, and, if called during business hours, his employer may complain. Our medical officer considers that a prolonged test is quite unnecessary, as such a delay sometimes produces an appearance of pseudo-agglutination from rouleau formation, but several authorities are convinced that the longer time is necessary.

Professional versus Voluntary Donors.—There can scarcely be two opinions as to the advantages of the voluntary over the professional donor, apart from the questions of cost and liability to disease, but the practice of paying donors is certainly on the increase in this country, whether it take the form of a frank fee or a lump payment in the guise of expenses. Payment attracts

a very different class of person from the voluntary donor, and I have a Belgian record that in the year 1934–5 thirty-eight out of ninety-seven volunteers were rejected for various reasons. In London, over a similar period, only twenty-two out of 591 failed to pass. A surgeon does not feel called on to pay too much attention to the feelings of a well-paid subject, and may adopt a technique that would cause considerable discomfort should he subsequently accept an appointment in a district where a voluntary system existed. The term "voluntary blood donor" is frequently misused, and I was once informed that those in a Midland city where I was speaking were paid four guineas per case plus an annual retainer. Were such a tariff in operation in London the cost of the service, which is at present well under £2,000 per annum, would rise to at least £25,000.

Frequency of Service.—In London there is no set limit to the number of transfusions per donor, and the safe frequency is considered by our medical officer to be four times per annum. In many places in the provinces a limit of ten, or even six, services in all is enforced, thus conveying the impression that the effect of a series of transfusions is cumulative and debilitating if continued beyond a certain point. Periodicity also varies from one to six months. Dr. Bécart of Paris informs me that he finds no difficulty in obtaining 400 c.cm. per week from his donors, and that two of them have served on over 900 occasions, frequently twice in a week. There should be some authoritative pronouncement on this point, as an artificial restriction of total entails a constant repetition of appeals for donors, which is in itself misleading to the public.

Apparatus.—There are over a score of rival instruments on the market, but in my personal opinion the simpler the form the better, if only for the sake of an apprehensive patient or donor. It must be borne in mind that an apparatus, efficient in the hands of the inventor, who has developed his own technique, may prove utterly ineffective when tried by a practitioner unfamiliar with it. I can specify more than one such instrument.

Direct versus Indirect Transfusion.—In London direct transfusion is almost obsolete, but some of its users are emphatic in its praises. I am not entitled to speak as to its value to the patient, but there are many drawbacks to its use, and I should like to see it entirely abolished. There must be a certain complication of apparatus; one or both needles may be withdrawn by an involuntary or delirious movement; more staff are required in the limited space available; the attention of the surgeon is divided; the donor must either be kept in an uncomfortable position for too long or the patient receive the blood too fast; and—important in the case of a voluntary and often hypersensitive donor—the latter may have his feelings unpleasantly exacerbated, possibly leading to fainting, by long proximity to a delirious, moaning, or moribund patient. Should the patient collapse or die during the transfusion, a not unknown occurrence, the donor would be still further affected by the attempts at resuscitation.

Position of Donor during Transfusion.—In some hospitals it is still the practice to extract the blood from the donor whilst in a seated posture. This always tends to faintness, and every case of fainting that we have had recorded in the past five years has been found to have followed the use of this method.

Dressing the Puncture.—Iodine is still very largely used, many surgeons and nurses being quite unaware of the risks of an iodine burn. We have more compensation claims of this nature than from all others put together, and I have seen some ghastly cases, some incapacitating a manual worker for weeks, owing to wet iodine pads being bandaged on the arm after a transfusion.

Local Services versus Individual Panels.—One of the objections to independent services is the fear, quite unfounded, that surgeons may find themselves under the control or direction of lay bodies, and this, I believe, is one of the causes of the increase of professionalism, practitioners preferring to pay fees rather than accept a voluntary service directed from outside. In London there is a pool of some 2,250 donors, available to serve over two hundred hospitals in and around the metropolis. I do not think that one of these institutions would willingly return to the old method of enrolling its own donors, keeping records of their availability, change of private and business address, holidays, etc., and calling them up as required. Only a few have attempted this, but most have applied to be reinstated on the list. Almost the only means of notification at their disposal is the police force, and this admirable organization would soon withdraw if called on to take messages to donors at the rate of from twenty to thirty a day. A committee of management, on which both donors and hospitals were fully represented, and with a medical man of outstanding ability to act as referee in the case of complaints, would seem to be the obvious desideratum, and this body would hold the balance between all the hospitals served, thus preventing competition for donors between different institutions in the same area.

Calling up of Donors.—Each district has its own problems and methods of meeting them, and a description of these might disseminate some valuable hints. From my own experience I am not in favour of voluntary motor transport. Calls are few and far between, and it happens in quite half the cases that the motorist depended upon is not available, having forgotten his promise of long ago. I have tried a rota, but without success, as there is usually a fiendish lack of calls that the volunteer in question can undertake, until he has gone off the rota. There is in London so comprehensive a system of transport that we can usually get a taxi, as a final resource, to a donor who has no other transport available. My own endeavours have been devoted to enrolling a band of telephone users who will convey a message to a near-by donor. This takes much less time than that occupied by a motorist, who has to start his car, get it out of a garage, close his garage, and then proceed to a donor at a distance. I am trying to get a telephone user within five minutes' walk of every member of the London Service willing to take an occasional summons. The donor can then usually find his own transport. In sparsely populated areas I would suggest that the local ambulance service should be asked to assist. In most cases a day-and-night service is available, and the list of donors could be kept there. Then, if no other means of conveyance were available, the ambulance itself could collect and transport the donor. In fact, to my mind, an ambulance station would make an ideal office for a local blood transfusion service, and I know of one which is very successfully organized therefrom.

Ages and Sex of Donors.—The London Service accepts donors of either sex and from the ages of 18 upwards, several of the members being over 60, and most of these find themselves benefited by their occasional blood-lettings. A good many appeals quote men only, and limit the age to 25 to 35, thus restricting recruitment. General practitioners are often active deterrent influences. We have had our donors informed: (*a*) that the operation may lead to loss of hearing, (*b*) that it may cause blindness, (*c*) that the blood of a person over 50 cannot possibly be of any value for transfusion purposes. The publicity gained by a national conference would dispel many of these misbeliefs.

Records of Cases.—Although Mr. Denis Browne suggested that it would be invaluable but Utopian and absurd to keep a classified record of all transfusion cases, it may be of interest to the medical profession to know that we have records of over 20,000 cases in London and about 2,000 in the provinces available for reference. They are not indexed, but should the necessity arise I have no doubt that I could obtain voluntary helpers to abstract any information or statistics therefrom.

Conclusion

I have mentioned the above matters as some only of the problems that would be ventilated, if not solved, by the conference which I suggest. Many others will suggest themselves to those interested, problems that affect the medical side of the work on which I am not qualified to speak. Some have occurred to me whilst writing this paper. Perhaps some medical organization will take the lead in the matter. I am at least able to say that the financial question does not present any difficulties.

Nova et Vetera

HISTORY OF MEDICAL EDUCATION IN THE PROVINCES

Dr. E. M. Brockbank has done a useful piece of work in attempting to clarify the difficult history of provincial medical education in England.[1] Before 1815 doctors were not obliged to qualify for the practice of their profession unless they intended to settle in a town where there was a corporate body which insisted upon the medical man becoming a member. Such a body was usually a Barber Surgeons Company established on the lines of the United Company in London, which had been established by Act of Parliament in 1540. They were often associated with other trades and were thus commercialized, and exercised very little real control over medical education. The bishops also had a power of licensing medical practitioners, but their licences soon fell into disuse. There were no tests of medical education except in Oxford, Cambridge, and London, and anyone might establish himself in any village and treat its inhabitants. In spite of this the general practitioner had a fair knowledge of his art derived for the most part through a system of apprenticeship and, as eighteenth-century novels show, he held a position only second to the parson. A few of the more enterprising had been to London, where they "walked the hospitals"; some of the more wealthy had even been educated at Oxford or Cambridge, Leyden, or other foreign university.

The general practitioner before 1812 was paid for the medicine supplied to the patient, not for his skill or advice. There is the well-known story of the consultant who ordered the patient a pill, whereupon the doctor in attendance begged that the remedy might be ordered as a draught. "For," said he, "if I send him a pill I shall only be able to charge twopence and I must go again in the morning to inquire how it has acted, but if it is in a bottle I shall receive a shilling." Indeed, the education of the family practitioner was due to this very cause. His remuneration had remained with but little change for at least a century, whilst in the meantime the price of glass had risen from eight to forty-five shillings. An association was formed to consider the best method of improving the profession and placing it under proper supervision.

The Apothecaries Act of 1815

On November 13th, 1812, it was resolved *nem. con.* that country practitioners be requested to form district committees to co-operate and correspond with the London committee on the means best adapted to promote the general and local interests of the profession. Much discussion took place and there was considerable opposition, but on January 10th, 1815, the Apothecaries Act passed the legislature for the better regulating of the practice of apothecaries throughout England and Wales. Provision was made for an examining body, and it was enacted that from and after August 1st, 1815, it should not be lawful for any person or persons to act as an apothecary in any part of England or Wales unless he had been examined by the Court of Examiners and received a certificate of his fitness to practise. The fee for such certificate was to be ten guineas for every apothecary who intended to practise in London or within ten miles of it; six guineas in any other part of England or Wales. There was a penalty for acting as an apothecary without a certificate and also inability to sue for debts owing to him for advice and medicine. The licence soon became popular; it required a certain degree of preliminary education, including a slight knowledge of Latin; the examination was not too difficult and it was held frequently.

The Apothecaries Act improved teaching in the profession but did not benefit it much pecuniarily. There must be some still living who remember the Day Book in which after a long day's work they entered "Die Jovis. Iter. Haust. xii cum pillul.," which, being interpreted, meant a journey of five or six miles in the gig in any kind of weather; the preparation of a dozen black draughts each in a 1½ ounce round glass bottle, with a blue pill perched on the top of every cork in a red cardboard circular box with a white top and bottom—the whole neatly wrapped up in white paper, sealed with red wax and left to be called for by the patient's groom the next time he came into town, each draught with its pill being priced at 1s. 9d.

From the early beginnings Dr. Brockbank carries the story on to the present time. He gives a good account of the shameful period when vested interests at the English College of Surgeons tried to strangle teaching in the provinces. He shows how the provincial schools have reached their present high position. He gives short but sufficient accounts of the more eminent teachers in Manchester, and illustrates his little biographies with portraits, for he has known many of them personally. The book is well written and reliable, but as it stands it is only an introduction to a subject which deserves to be treated at much greater length.

D'A. P.

[1] *The Foundation of Provincial Medical Education in England, and of the Manchester School in Particular.* By Edward Mansfield Brockbank, M.B.E., M.D., F.R.C.P. Manchester: University Press, 1936. (Pp. 192. 8s. 6d. net.)

HISTORY OF PHYSICAL DIAGNOSIS

In a paper on the history of physical diagnosis[1] Dr. W. E. Robertson of Philadelphia maintained that it was not until the coming of the physicists Galileo, Torricelli, Stephen Hales, John Mayow, and Lavoisier that medical science began to make rapid progress. Many remarkable advances in medicine had owed their inspiration to laymen. He quoted Oliver Wendell Holmes to the effect that the profession had "learned from a Monk how to use antimony, from a Jesuit how to cure agues, from a Friar how to cut for stone, from a soldier how to treat gout, from a sailor how to keep off scurvy, from a postmaster how to sound the eustachian tube, from a dairymaid how to prevent small-pox." On the other hand it was a physician, Thomas Young, who in 1802 gave us the wave theory of light, paving the way for Michaelson's studies in the velocity of light and his discovery of the interferometer.

Turning to physical diagnosis Dr. Robertson stated that 541 separate and distinct physical signs had been enumerated, including sixty-five murmurs, thirty rales, thirty-four bruits, and 223 reflexes. Despite this wealth of means of physical diagnosis the modern tendency was to rely increasingly on the application of scientific chemical and instrumental procedures.

An exhibition of instruments and books relative to physical diagnosis[2] included a section on appendicitis. The first authentic record of a definite appendicular lesion was made by Janus Antonius Saracenus as early as 1642, and the first operation for this condition was performed in 1759 by Mestivier, who lucidly described the pathological picture observed in the subsequent necropsy. Mestivier's work, however, made no impression whatever on contemporary medical opinion. It was not until 1812 that Parkinson described a case in English, the first in which perforation was recognized as the cause of death.

[1] "Physical Diagnosis from the Time of Röntgen." *Annals of Medical History*, New Series, vi, No. 3, 255.
[2] W. E. Robertson and H. F. Robertson: *Medical Life*, March, 1935.

The second congress of the Pan-Pacific Surgical Association was held last August at Honolulu, Hawaii. It was attended by 188 delegates from the United States, Australia, New Zealand, China, Japan, and the Hawaiian Islands, and was acclaimed even more successful than the 1929 congress. The council decided to hold the next congress again in Honolulu in 1939, and the following officers were elected: president, Dr. J. Hardie Neil, New Zealand; vice-presidents, Dr. E. L. Gilcreest, San Francisco; Dr. J. R. Judd, Honolulu; secretary-treasurer, Dr. Forrest J. Pinkerton, Honolulu. Sir James Barrett and Dr. T. F. Ryan (Melbourne) are chairman and vice-chairman of the Australian section of the council.

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PROBLEMS OF BLOOD TRANSFUSION

We publish to-day in another column a contribution to medical literature by a layman who has special claims to the notice of the profession. Mr. P. L. Oliver, by his years of disinterested service as founder and organizer of the British Red Cross Transfusion Service, has acquired a unique position as an authority on the problems connected with blood transfusion, and his words must be received with great respect. He writes from the practical standpoint, and from long experience can even observe differences in the technique of the operation of transfusion with an intelligent impartiality. Many "academic" problems have in the course of time obtruded themselves upon him by reason of their practical importance, and there is no call for a lifting of the eyebrows when a layman like Mr. Oliver refers to the controversial matter contained in headings such as "cross-grouping" and "universal donors."

There was a time when blood transfusion seemed to be a simple, almost a fool-proof, affair. Larger experience showed that many complications, which might even amount to catastrophes, would crop up when least expected. These were connected especially with the chemical idiosyncrasies of the blood of many otherwise normal individuals, and in spite of an immense amount of laboratory work the difficulties have even now not been completely elucidated. The organization of a service of blood donors, such as Mr. Oliver has for many years provided in London, introduces a great variety of administrative and social problems which again are not easily solved.

Mr. Oliver's plea is for the holding of an annual Blood Transfusion Conference at which all controversial matters should be adequately discussed and experience pooled for the benefit of all. The number of calls for blood donors in London answered by the Red Cross Transfusion Service runs now into thousands during a year, so that the importance to the community of an efficient service cannot be questioned. The service had its origin in London, and Mr. Oliver's experience is now in constant demand for the development of branch organizations in the provinces, most of which become affiliated with the Central Transfusion Service. An important recent addition to the functions performed by the service is the provision of high-titre grouping sera at a cheap rate for the use of all hospitals, whether associated with the service or not. This serum is prepared in the laboratories at St. Bartholomew's Hospital and marketed by Messrs. Burroughs Wellcome and Co., but it is not a commercial venture. The supply of sera was organized in order to meet an administrative difficulty, which seemed at one time likely to wreck the whole Transfusion Service, because many hospitals made a practice of calling for Group O donors for almost all their patients without reference to the patients' groups. The number of Group O donors was thus made inadequate to supply the demand, and it became necessary to refuse to send a donor at all unless the patient had been grouped. It was therefore essential to remove the excuse that grouping sera could not easily be obtained. In addition, the assurance that the serum supplied will be of a high titre should also tend to eliminate errors in grouping and so to reduce the incidence of transfusion catastrophes, which are most commonly due to undetected incompatability of the bloods of patient and donor.

It is to be feared that in the past many institutions have not appreciated the disinterested motives that have led the donors to offer their services, in the shape of blood, to the community. Donors have not always been given the amount of consideration that was their due, and the organizer of the service has had to exercise constant vigilance in order to protect his volunteers. This has entailed a watch against possible injury to donors through faulty technique at the hands of inexpert operators, as well as insistence upon observation of the ordinary courtesies. The blood donors have even formed an independent association of their own so that their collective weight can be brought to bear when it is thought that their interests demand it.

Thus the transfusion organization may be subjected to a cross-fire of criticism from donors and recipients, and it can be seen that the organizer's lot cannot be an easy one. Perhaps his lot would be considerably eased by a fuller understanding of his difficulties by both the medical profession and the staffs of medical institutions, and at the same time the efficiency of transfusion services throughout the country increased, by the annual conference that is suggested. Mr. Oliver mentions a number of matters which might be profitably discussed, and many others could be added to his list, such as methods of preserving blood so that it could be "laid down" ready for use. Simplification of technique and organization is always the end to be held in view, and it seems to be clear that opportunities for co-ordinated discussion would arouse much interest and fulfil a really useful purpose. The conference might in due course branch out into the discussion of important side issues, such as the bearing of blood group tests on anthropological questions and the medico-legal value of blood tests. These matters have all come into prominence as a result of the necessity for finding out the cause of the reactions which often followed transfusions before the patient was properly safeguarded by careful group tests. We hope that Mr. Oliver's suggestion will meet with the consideration it deserves.

THE VITAL BALANCE SHEET OF 1934

To inconsiderate persons the appearance this week of the text volume of the Registrar-General's Statistical Review of 1934[1] may seem belated. Such persons may reflect that time elapses between the making up of the annual accounts of a business firm and the publication of the auditors' report. The detailed analysis of biological transactions which credited 597,642 live births and debited 476,810 deaths to the national concern may be expected to consume some thought and time. The auditors' report, now before us, deserves close scrutiny. Of the general demographic features we shall say little. Once again comes the warning that the birth rate is insufficient to maintain the population. We had in 1934 a population of nearly 40.5 millions ; at current rates of mortality the births would support some 36 millions. This, owing to a changing age distribution, is a very sanguine view of what is likely to happen. That subject, however, has been, and will be again, often discussed.

The analysis of the debit side of the account—the deaths—is of particular interest to medical readers. Even to refer to the subjects discussed in the 159 pages of the medical section of the work would exceed our limits. We can only note some interesting points. In all age groups except 5–10 in males and 5–10 and 10–15 in females the record of 1934 was better than that of 1933. In terms of the rates of 1911–14, no age group under 75– shows an improvement of less than 10 per cent., while at 0–5 the rates are less than half those of the last pre-war triennium. The setback in mortality at 5–10 is due in the main to diphtheria, to which cause 1,859 deaths of children aged 5 to 10 years were assigned—25 per cent. of all deaths in this age group. The diphtheria death rate at this time of life was almost the highest since 1902. There has indeed been a progressive shifting of the age of danger from pre-school to school age, a phenomenon not confined to England and Wales, but noticed in Germany. In the first year of life the rate of mortality from diphtheria had reached the low level of 12 per 100,000 live births in 1932 and has remained at that low level. In the second year of life the 1934 rate was above that of the three previous calendar years, and for the third year of life lower rates had occurred in 1923–8 and 1931–3. In the two following years of life the rates were appreciably higher than in the previous year. At 5–10 the rate of 61 per 100,000 has only once been exceeded since 1902—namely, in 1920. But while in 1902 the rate of mortality at 1–2 was 186 per cent. of the rate at 5–10, and in 1920 was 135 per cent., in 1934 it was only 57 per cent. The age group 5–10 had a setback. Among the numerous advances we may note that not only is the rate of mortality from tuberculosis the lowest yet recorded, but that the rate of mortality in young women aged 20 to 25 years, which until quite recently had not improved upon the pre-war result, now shows a fall to 9 per cent. below that level, and 18 per cent. below the unsatisfactory 1922–4 figure.

The volume contains a number of special statistical studies of much interest. Thus there is a comparison of the standardized mortality rates of the eighty-three towns now classed as county boroughs for the triennia 1911–14, 1921–4, and 1931–4. Expressing these as percentages of the contemporaneous national rate, the pre-war range was from 74 to 150 per cent. ; the range in 1921–4 from 83 to 140 ; in 1931–4 the limits had again contracted, to 87 and 137. This narrowing of the range may reasonably be attributed in the main to the effects of public hygiene and amelioration of the general conditions of life in the towns where mortality was highest in 1911–14. Twenty years before, fifty-four towns had standardized rates exceeding 14 per 1,000 ; in 1931–4 not one had a rate as high as 14, and thirty-one had rates below 10 per 1,000. The eight towns with highest mortality in 1911–14 record a 33 per cent. improvement, the eight towns with lowest rates a 19 per cent. improvement. A tabulation, by the social class of husband, of puerperal mortality per 1,000 live births to married women for 1930–2 brings out the result that the rate declines with social class. Taking all puerperal causes, the rate on all married women is 4.13 per 1,000 live births ; for the two highest social classes it is 4.44, for skilled workers 4.11, for semi-skilled 4.16, and for unskilled workers 3.89. It is, of course, noted that age of parturients and birth number are not the same in different classes, but it is certainly remarkable that "the rate for puerperal albuminuria, convulsions, and other toxaemias is lowest for the unskilled class, notwithstanding that in that class the greatest degree of poverty and malnutrition is presumably to be found."

It is not easy to stop when one begins to summarize these investigations, but enough has surely been said to convince the medical reader that this is a work to be studied at first hand. It reflects the highest credit upon the staff of the General Register Office and deserves a wide circulation.

[1] The Registrar-General's Statistical Review of England and Wales for 1934. Text Volume. 1936. H.M. Stationery Office. (3s. 6d.)

OCCUPATIONAL DEAFNESS

In occupational deafness we are faced with a problem that has been neglected in this and many other countries, and, inasmuch as its existence has long been recognized, the prevention and cure of the condition, and the question of compensation, are matters that are in urgent need of attention. In a stimulating and comprehensive review[1] of the subject Dr. Raoul Caussé points out that any occupational disease or disability is not likely to receive the attention it may deserve unless and until it is specified in legislation ; and that whereas in general the position is clear in the case of injuries due to accidents at work, conditions such as deafness which gradually develop in the course of work do not make so spectacular an appeal, and therefore tend to be neglected, even though the disability may be very real. In France eligibility for compensa-

[1] *Ann. d'Otol.-Laryngol.*, 1935, vii, 774.

tion depends upon whether the disability is specified in the law relating to the industries or trades concerned, and upon whether the individual has been engaged in the particular occupation for a minimum number of years. Occupational deafness is not included in existing legislation in that country, but a strong claim is put forward for that to be done in view of the clinical, pathological, and scientific evidence which has accumulated elsewhere. In five countries—Germany, Bulgaria, Mexico, Czechoslovakia, and U.S.S.R.—occupational deafness is listed as one of the occupational diseases or disabilities for which a worker is eligible for compensation under certain conditions. Before considering legislation it is of course essential that a very detailed and thorough investigation should be made into all aspects of any new type of disability due to industrial work. Obviously the cause must be definitely located in the industry or trade, and the disability must result without question from such cause. In respect of deafness, it is by no means easy to define precisely the working conditions which are in themselves calculated to produce partial or total deafness in a given time. Thus it would be necessary to measure and then specify the intensity of noise and probably the pitch, and from existing evidence it appears that the presence or absence of mechanical vibration affecting the worker would also have to be taken into account. Then again the type of deafness resulting from such working conditions needs investigation, and the impairment of hearing function in each individual case would have to be assessed in order to determine the degree of disability. Many trades and industries would need to be included in a thorough survey—for example, boiler-making, weaving, ship construction, mining, locomotive driving, and aero-engine testing. Recent advances in scientific methods and apparatus for noise measurement and analysis, together with the audiometric assessment of hearing capacity, should make it possible once and for all to elucidate this problem of occupational deafness and to show whether prevention is possible or compensation justifiable in the future. However complex, difficult, and tedious the task may be, it should be done without further delay, for "boiler-makers' deafness" is an accepted reality in the eyes of all except the law.

TOBACCO AND THROMBO-ANGIITIS OBLITERANS

Although it has not been established that the smoking of tobacco is responsible for thrombo-angiitis obliterans, the victim is nearly always a smoker, and it is known that after the appearance of the symptoms continuation of smoking is harmful. Further, the disease is very rarely seen in the female, and this may in part be explained by the less intense smoking habits of women. An inquiry into the immediate effects of smoking on blood pressure, pulse rate, skin temperature—and also the skin reaction to injected tobacco extract—has been made by W. G. Maddock, R. L. Malcolm, and F. A. Coller.[1] Tests carried out on twenty-nine healthy young adults showed that after the smoking of two cigarettes the skin temperature of the fingers and toes fell from 0.3° to 4.8° C., the pulse rate increased from 10 to 28 beats a minute, and the systolic blood pressure rose from 6 to 24 mm. Hg, the diastolic pressures rising by roughly the same amount. These changes were of the same order in the two sexes, but were more pronounced in Jews than in Gentiles. Only about one-third of the subjects were sensitive to tobacco as judged by the intradermal injection of a tobacco solution, and no correlation was possible between the skin sensitivity and the cardiovascular effects of smoking, suggesting that two different components are involved. That nicotine is responsible for the cardiovascular effects is indicated by the observation that these are reproduced when nicotine is injected intravenously in an amount which would theoretically be absorbed after smoking two cigarettes. That the temperature changes in the extremities caused by smoking cannot be reproduced after local nerve block, nor in the toes after lumbar sympathetic ganglionectomy, clearly points, as would be expected, to the nervous system as the part of the body affected. The results of the inquiry confirm the view that smoking is injurious to those with occlusive vascular disease, and show that the immediate vaso-constrictor effects are the same in women. If, as some believe, thrombo-angiitis obliterans is a disease to which Jews are especially liable, it may be significant that in them the reactions to smoking are more intense, especially the fall in skin temperature.

[1] *Amer. Heart Journ.*, July, 1936, p. 46.

PREVENTION OF POLIOMYELITIS

We referred recently[1] to experiments by Sabin, Olitzky, and Cox which showed that repeated spraying of the nose in monkeys with astringent solutions protected them against poliomyelitis virus introduced by this route. This proceeding had been shown by Armstrong and Harrison to protect mice against intranasal inoculation with the St. Louis encephalitis virus, and these two authors[2] now carry the matter a stage further by reporting experiments which appear to show how this treatment acts. Picric acid, one of the astringents used, was added to buffered solutions of different *p*H, and these were tested for their capacity as nasal sprays to protect mice against the St. Louis encephalitis virus and for their capacity to precipitate protein from ascitic fluid. Neutral solutions were without effect in each of these tests, whereas acid solutions both were protective and precipitated protein *in vitro*. It therefore seems certain that these astringents act not as antiseptics but by causing a change in the nasal mucosa, which forms a mechanical barrier to the passage through it of a virus. The solution now definitely recommended for the prophylaxis of poliomyelitis in human beings consists of 0.5 per cent. of sodium alum and 0.5 per cent. of picric acid in 0.85 per cent. saline; this has a *p*H of about 1.9, and has been shown to protect monkeys against poliomyelitis. The instructions for its use are that "on the appearance of cases of poliomyelitis in the community" the nose should be sprayed thoroughly "once daily on alternate days for three or four applications, then once weekly thereafter for the duration of the poliomyelitis season." This appears likely to be an admirable safeguard when there is a serious and immediate risk of infection, but its widespread application seems to call for some further know-

[1] *British Medical Journal*, August 22nd, p. 398.
[2] *U.S. Public Health Reports*, 1936, li, 1105.

ledge of its ultimate effects. Rhinologists are insistent on the fact that local applications to the nose, unless of the blandest possible nature, are likely to do considerable and sometimes permanent harm, and here is an application conditioned for its efficacy by its capacity to coagulate protein and thus presumably to kill the cells in which this change is produced. The opinion of rhinologists might well be sought before this proposal is adopted. It should be remembered that the case rate of poliomyelitis, even under the worst epidemic conditions, is low in proportion to the population at risk ; this means that every actual attack prevented entails the prophylactic treatment of many individuals.

PARATHYROID TUMOURS AND HYPERPARATHYROIDISM

Not all parathyroid tumours are active tumours in the sense of producing hyperparathyroidism. Geoffrey Keynes[1] has recently reported one in a woman aged 50 which was palpable before operation, and on removal proved to be a parathyroid adenoma weighing 18 grams. The tumour consisted almost exclusively of the oxyphil cells which are usually seen in small groups in sections of normal parathyroid glands. Keynes's patient showed no signs of hyperparathyroidism. These quiescent parathyroid tumours, apparently quite rare, may be compared with the inactive adenomata which occur in the thyroid gland and possibly also in the pituitary body, in addition to those which are associated with endocrine disturbances. As a contrast to the benign quiescent tumour comes a report by A. M. Snell and C. W. Mayo[2] from the Mayo Clinic of a carcinoma in a parathyroid body which was associated with well-established hyperparathyroidism. This tumour weighed 101 grams, and lay at the lower pole of the right lateral lobe of the thyroid gland of an engine-driver aged 47, who before operation had had well-marked signs and symptoms of hyperparathyroidism, including pain and weakness in the legs and hypercalcaemia. Hyperparathyroidism may be present independently of any parathyroid tumour, and is then the result of a generalized parathyroid hyperplasia,[3] probably comparable to the hyperplasia which occurs in diffuse toxic goitre. There is thus a very close resemblance between the varieties of parathyroid hyperactivity and thyroid hyperactivity: both may be associated either with a generalized hyperplasia or with a neoplasm, benign or malignant ; such tumours may, however, be quite unproductive of general symptoms in the form of endocrine disturbances.

THE POST OFFICE MEDICAL SERVICE

In a booklet just issued by the Post Office Dr. H. H. Bashford gives an interesting account of what is perhaps the largest industrial medical service in the world. The service dates back to 1855 and consisted in the beginning of one full-time medical officer. Now it embraces a full-time headquarters staff in London which sees 70,000 patients and dispenses 175,000 prescriptions annually, and some 2,600 local medical officers throughout the kingdom who are general practitioners holding the Post Office appointment in addition to their private practices and who are paid on a capitation basis. The Post Office, with its 250,000 employees, is now the largest employer of labour in the country. The medical service behind this enormous army of male and female workers of all grades is charged not only with the task of ministering to their sickness, but with numerous other activities affecting their health and general physical well-being. Thus it examines candidates for entry into the service and deals with questions of sanitation, ventilation, and the general condition of Post Office buildings. It is consulted on the shape and suitability of uniforms and the average daily distances covered on foot or bicycle by postmen and boy messengers and the weights carried by them. A purely incidental feature of the Post Office medical service, though one of national significance, is the fact that it is the only organization of such variety and magnitude possessing complete sick records, under working conditions, of nearly a quarter of a million men and women from the ages of 16 to 60. These records yield information of the greatest value, both to industry and to medicine, of the long-distance effects upon working capacity of various physical abnormalities or disabilities and the efficacy of various forms of remedial measures. Another feature of the medical service is its record of the improvement in physical standards of juveniles during recent years. This booklet (Post Office Green Paper No. 31) can be obtained free on application to the Public Relations Department, General Post Office, London, E.C.1.

MAPHARSEN IN THE TREATMENT OF SYPHILIS

Any drug which appears to have a well-marked beneficial effect in syphilis is worthy of attention. Mapharsen is the hemialcoholate of meta-amino-para-hydroxy-phenyl-arsine oxide and is also known as arsenoxide ; it is interesting to note that this is the precursor substance in the synthesis of arsphenamine and also the compound formed in the body by the breakdown of arsphenamine. This drug has recently been given an extended clinical trial in America by Gruzhit and his collaborators[1] over a period of two and a half years, involving 75,589 doses and 4,841 patients. Their method was to give three courses of eight weekly injections of mapharsen with two courses of eight injections of mercury salicylate in between, and, finally, a course of twelve injections of bismuth subsalicylate, the whole period of treatment occupying fifty-two weeks. Under this regime 100 per cent. of cases of sero-negative primary, 92 per cent. of cases of sero-positive primary, and 97 per cent. of cases of secondary syphilis gave negative Kahn reactions after one year's " continuous " treatment. Spirochaetes disappeared from superficial lesions within twenty-four to forty-eight hours after one dose of 0.04 gram, and the lesions themselves healed more quickly than with neoarsphenamine. After one year's treatment as outlined above no case showed a pathological spinal fluid, but serologic relapse in a period from two months to two years occurred in 14.9 per cent. of cases. Reactions were never severe (no jaundice or exfoliative dermatitis), but moderate reactions occurred

[1] *Brit. Journ. Surg.*, 1936, xxiv, 403.
[2] *Proc. Staff Meetings Mayo Clinic*, 1936, xi, 633.
[3] Cope: *New England Journ. Med.*, 1935, ccxiii, 470.

[1] *Arch. Derm. and Syph.*, 1936, xxxiv, 432.

4.4 times per 1,000 injections. Moore and others[2] found that mapharsen had an effect on the serum reactions almost identical with arsphenamine and superior to that of neoarsphenamine, but Kulchar and Barnett[3] state that whereas lesions heal more quickly with mapharsen than with neoarsphenamine, serological reverse occurred more slowly than with arsphenamine. Other investigators (Foerster, *et al.*[4]) report more and severer reactions, including jaundice (5 per cent.) and renal impairment, and Stokes stated that reactions might deter patients from continuing their attendance. There is some evidence that irregular or inadequate treatment results in rather a high proportion of pathological spinal fluids, but this may well happen with any drug. There seems little doubt that mapharsen is a potent remedy fit to be ranked with arsphenamine in the treatment of early syphilis, even if moderate reactions arise as often as, or more often than, with that drug: the severe ones, such as exfoliative dermatitis and jaundice, seem to be rare, and in no case has a death directly due to mapharsen been reported. There are no reports of any extensive trial of the drug yet published in this country, though it is being tested in a number of clinics. It certainly seems worthy of an extended trial, in conjunction with either bismuth or mercury. Since it is reported that 80 per cent. of a given dose is eliminated within one week, it might be that the concurrent use of bismuth would give better results than alternating courses of the two drugs.

TENNIS ELBOW

Compared with most injuries that afflict the human body, tennis elbow is a very trivial affair. Yet for the man who suffers from it the disability may often be considered highly important, and to the Olympians who view lawn tennis as an international problem or as a means of making a remarkably good living a tennis elbow may be a major catastrophe. The curious thing is that this little lesion boasts over twenty pathological explanations and nearly as many methods of treatment, most of which seem to be effective. It is, of course, conceivable that there are several varieties of tennis elbow, but not a number going into double figures. J. H. Cyriax[5] has tried to clear up the confusion, and with considerable success. He has carefully reviewed the literature, and, after excluding many unlikely and several fantastic explanations of the condition, deals at length with three—which we may call epicondylar bursitis, nipping of a synovial fringe, and partial avulsion of an extensor muscle. There are two bursae, one superficial and the other deep, in relation to the lateral epicondyle of the humerus—the region in which the pain of tennis elbow is located. Osgood and several other observers have demonstrated definite changes in these bursae, revealed sometimes by effusion and sometimes by calcification visible in the *x*-ray film. But this lesion accounts for only a few cases of tennis elbow, and it must be regarded as a rarity. Trethowan was convinced that a number of cases were due to inflammation and nipping of the synovial fringe known to project into the joint posteriorly between the head of the radius and the capitellum. He cured eight patients by removal of this fringe, but, as Cyriax points out, the cutting of muscle necessary in approaching the joint might equally well have been responsible for the relief of symptoms, and it is significant that other surgeons have not often found it necessary to explore the joint. The last and quite the most comprehensive explanation is that there is a partial rupture of one of the extensor muscles arising from the lateral epicondyle, probably the extensor carpi radialis brevis: there is produced at this point a small patch of traumatic periostitis. The movements that produce tennis elbow —extension of the elbow with the wrist extensors in action—the characteristic tenderness, the occasional radiographic demonstration of periosteal reaction, and the findings in a few cases that came to operation, are all in favour of this theory. The condition may be relieved by relaxation of the extensors of the wrist (by a cock-up splint), or cured with remarkable rapidity by a manipulation which has always as its object the stretching of the affected muscle. The first allows the partially torn muscle to heal, and the second converts a partial into a complete rupture, which permits the traumatized area to heal undisturbed by periodic traction. It is noteworthy that tennis elbow rarely recurs after treatment by manipulation, and for this Cyriax advances the simple explanation that further rupture cannot possibly occur at the origin of a muscle that has been completely torn from its attachment and is therefore permanently overlengthened. This is the rationale of the manipulation. His own method consists in deep massage over the tender point, followed by forced adduction of the extended and supinated forearm. He admits that it is slower than manipulation under anaesthesia (four treatments are generally necessary), but it does not interfere with the patient's ordinary activities, seeing that no anaesthetic is required.

POSTURE AND PHYSIOLOGICAL EFFICIENCY

The correction of faulty posture involving the thoracic and lumbar spinal curves has long been considered a mechanical advantage to the body, and this belief is supported by a good deal of clinical evidence. L. B. Laplace and J. T. Nicholson[1] have attempted, however, to assess more accurately the effects on body function of changing from a kypho-lordotic posture to one regarded as optimum by orthopaedic standards. A group of male and female subjects was studied which included eighteen healthy adults, all of whom had been trained in the ability to correct their postural defects. Ten of them were symptom-free and eight were patients of an orthopaedic clinic who had symptoms referable to their postural defects. All observations reported on each individual were taken on the same day to ensure comparable results, although preliminary periods of observation were usually made. The following studies were carried out with the subject standing first in the corrected, then in the faulty, posture. (1) Orthodiagrams were taken, with special attention to the thoracic and cardiac measurements and the maximum diaphragmatic excursion. (2) Estimations of vital capacity were obtained with a standard spirometer.

[2] *Amer. Journ. Syph.*, 1936, xx, 503.
[3] Ibid., 1936, xx, 482.
[4] *Arch. Derm. and Syph.*, 1935, xxxii, 848.
[5] *Journ. Bone and Joint Surg.*, 1936, xviii, **921.**

[1] *Amer. Journ. Med. Sci.*, 1936, cxcii, 345.

(3) Electrocardiograms were taken. (4) Estimations of oxygen consumption and graphic records of the respiration were carried out, including measurements of tidal air and minute volume, obtained with a standard spirometer for metabolism determinations. (5) Repeated determinations of blood pressure and pulse rate were made over ten-minute intervals, with preceding and intervening ten-minute intervals during which the subject was recumbent. The results show that the correction of postural defects had a significantly beneficial effect on circulatory and respiratory function in most cases. In some this effect may be spectacular, but occasionally full correction has not given the best physiological results. Generally speaking, vital capacity was always increased when correct posture was assumed ; respirations became slower and deeper and the respiratory minute volume was increased. Changes in blood pressure and pulse rate on standing indicated, in most subjects, a better degree of circulatory efficiency in the correct posture. An elevation of the diaphragm with respect to the top of the chest was not always seen with corrected posture, nor had the heart become more transversely placed ; but there are other factors to be considered here, including the question of vertical rotation of the heart. One important conclusion is drawn from the study—the therapeutic value of correcting a postural defect can seldom be estimated beforehand, and the amount of benefit acquired bears no constant relation to the degree of the patient's " slump."

COSMETIC PRACTICE

A good example of Teutonic thoroughness is the Lexicon of Cosmetic Practice[1] under the direction of Drs. R. Volk and F. Winter. British dermatologists are a little inclined to fight shy of cosmetics, and, so far from producing an encyclopaedia of some seven hundred pages on the subject, they prefer to adopt a somewhat mediaeval and puritanical attitude, and leave the whole matter to the " beauty specialists " of Bond Street and its neighbourhood. The Continental tendency, on the other hand, is to embrace under the term " cosmetics " not only such cutaneous disorders as are obviously concerned in the subject, but also to extend the domain in all sorts of directions, some of which, it may be confessed, are quite unexpected. Plastic surgery is, of course, intimately concerned with cosmetic factors, but it is rather a surprise to find that this lexicon includes articles on artificial limbs, gymnastics, false teeth, not to speak of superstition and psychoanalysis. It will be seen that the subject is a far wider and deeper one than would be guessed at first, and it must be admitted that under modern conditions there is a great deal to be said for the comprehensive view that the authors of this lexicon have taken of their subject. Among civilized communities there is no doubt that the improvement in the general appearance of the population that has taken place during the last hundred years is very great indeed, and in its broadest sense that may be regarded as a triumph of cosmetics. This illustrates the enormous extent to which aesthetic and cosmetic advances depend upon the progress of medical science. No single specialty can claim the credit for the general improvement. The rise of antiseptic surgery is perhaps the most important factor, for it has facilitated the removal of unsightly swellings and blemishes which formerly people were content to endure because of the risk and pain of removal. Medicine has done a great deal by discovering the way to deal with disfiguring complaints, notably syphilis and lupus. During the last twenty-five years it has become much rarer to see cases of disfiguring ulceration, at all events in the more civilized peoples of Western Europe and America. The orthopaedic surgeons and the dietetic specialists have straightened the limbs of the population, and greatly diminished the numbers of cripples, and at the same time there has been a gradual rise in the standard of living, which has improved the health of the public in every way and with it their appearance. Consequently, although at first sight one may be surprised at finding in a handbook of cosmetics all sorts of things which a superficially minded reader might regard as incongruous, there is no doubt that those who are responsible for this encyclopaedia were right in making their subject cover the widest possible field, and they have produced a very interesting volume.

[1] *Lexikon der Kosmetischen Praxis.* By R. Volk and F. Winter. Vienna: Julius Springer. (R.M. 75 ; geb., R.M. 80.)

WORLD POPULATION GROWTH

In the September issue of *Human Biology* Professor Raymond Pearl and Sophia A. Gould have an article on world population growth which is of interest. The facts are not, except in detail, new, but Professor Pearl is always a stimulating writer. He points out that world population growth is a phenomenon of modern times ; that before the seventeenth century growth was very slow, then quickened, and is now slackening. The existing population he estimates to be about 2,073 millions, and, if the present cycle of change endures, the upper limit will be about 2,645 millions, to be closely approached within two hundred years. The existing population is distributed so unevenly that more than half the inhabitants of the world are concentrated upon about 5 per cent. of its land area. " It is a common dictum that the faults and troubles connected with the ' distribution ' of goods are chiefly to blame for the world's woes, with the implication that if these faults could be eliminated the world's economic troubles would largely disappear. But, faults or no faults, the present geographical arrangement of world population makes it plain that *without* substantial ' distribution ' of the means of subsistence from the places where they are produced to the places where they are used, something over a half of all human beings could not go on living at all." A touch of optimism in writings upon population and world economics is rare and refreshing.

Volume II of *Treatment in General Practice*, comprising fifty articles which appeared in the *British Medical Journal* under that heading between September 7th, 1935, and September 26th, 1936, is published this week by H. K. Lewis and Co., Ltd. The chapters are grouped under diseases of the nervous system, diseases of the digestive system, diseases of the blood and blood-forming organs, rheumatic diseases, diseases of metabolism, and diseases of the kidneys. The book consists of 438 pages, and its price in Great Britain is 10s. 6d.

THE ENDOCRINES IN THEORY AND PRACTICE

This article is one of a series on Endocrinology contributed by invitation

EXTRACT OF THE POSTERIOR LOBE OF THE PITUITARY GLAND

BY

O. LEYTON, M.D., D.Sc., F.R.C.P.

The posterior lobe of the pituitary gland contains at least two active principles of therapeutic value. These have been isolated as white powders free from protein. One of them acts upon the muscle of the uterus, and is therefore called oxytocin (quick-birth); the other constricts blood vessels, thereby raising the blood pressure, and has been named vasopressin. Oxytocin is 150 times and vasopressin eighty times as potent as the standard powder of posterior pituitary gland. Oxytocin has little or no action upon the blood vessels. Vasopressin has little or no action upon the uterus, but, in addition to constricting blood vessels, it modifies metabolism, controls the secretion of the kidneys, and can stimulate peristalsis of the alimentary tract. Certain extracts injected in large quantities into animals cause ulceration of the stomach.[1]

As the separation of these two substances from the pituitary gland is complicated their price must be high; whenever, therefore, the effect of the second substance cannot do harm, an active extract of the gland may be used. The substances have been used therapeutically in the following conditions:

Oxytocin (Pitocin)	Vasopressin (Pitressin)
Insufficient contraction of the uterus	Transurethral resection of prostate gland Diabetes insipidus Xanthomatosis Hypoglycaemia Paralytic ileus Circulatory failure Haemoptysis Asthma

Its Use in Obstetrics

The main bulk of pituitary extract marketed is used by obstetricians to increase the strength of the contraction of the uterus and also to prevent or control post-partum haemorrhage. Thirty years ago Dale[2] demonstrated the action of pituitary extract upon the uterus, and a few years later Blair-Bell[3] recorded his observations of its use in obstetric practice. The action of the extract is powerful, and if used incorrectly may lead to rupture of the uterus or asphyxia neonatorum. The main contra-indications are: the first stage of labour, mechanical obstruction, complete inertia of the uterus, and a high retraction ring. If the patient has a high blood pressure, myocardial degeneration, an impaired renal function, or if the foetal heart sounds are feeble, it is wise to use pitocin rather than an extract which would contain vasopressin in addition.

Repeated small doses of pituitary extract have been employed to induce labour at full time; although several skilled observers have recorded high percentages of successes, disaster may follow its indiscriminate use, and all those who wish to avoid anxiety will reserve it for cases either in which the uterus is empty or in which there is no doubt whatsoever that it can be emptied shortly after the injection of the extract.

Direct injection of pituitary extract into the uterus after the removal of the child by Caesarean section will control haemorrhage and cause firm contraction. It is alleged that uterine haemorrhage occurring at puberty or at the climacteric may be controlled by the injection of 5 units intramuscularly a few days before the anticipated date of menstruation; since there does not appear to be any physiological explanation of this action its success must not be expected invariably.

Its Use as a Haemostatic

Pituitary extract has been employed to produce temporarily a small bloodless region, and recently has been reported[4] as helpful in the removal of the prostate gland piecemeal through the urethra, especially when the lobes of the prostate are large. Its use, however, increases the length of the operation, because the cystoscope must not be removed until the pituitary extract has ceased to act and the surgeon is satisfied that haemorrhage will not occur.

Diabetes Insipidus

The polyuria of diabetes insipidus, in the great majority of cases, can be controlled by injections of pituitary extract or pitressin.

(All the evidence at present suggests that vasopressin is only one substance with multiple actions; but it is only a few years ago that the extract of the posterior lobe of the pituitary gland was considered to contain only a single active principle.)

Administration by the mouth of immense doses of dried pituitary gland or extract, even when protected from the action of gastric juices by suitable coating, proves useless in the treatment of diabetes insipidus. Subcutaneous injection is perhaps the most efficacious method. Continuous injection of a solution of pitressin proved that only small quantities are required in the circulation; therefore the greater the number of injections in the twenty-four hours the less the total quantity necessary to control diuresis. On the other hand, the larger the dose the longer its action, but the size of the single dose has to be kept below that which will lead to discomfort. The optimum dose is the largest which will not make the patient "turn green," feel faint, or suffer intestinal pain which is followed by an action of the bowels. The injections should be timed to ensure an uninterrupted night's rest. Quite frequently diuresis in untreated diabetes insipidus is less during the night than during the day, and may be diminished still further by a soporific. This latter fact was for a time considered to be evidence in favour of diabetes insipidus being due to polydipsia with resultant polyuria, but since obstruction of the ureters in animals deprived of the posterior lobes of their pituitary glands abolishes thirst, the explanation of the action of soporifics must be along different lines.

Although extracts of pituitary gland are standardized, there nevertheless seems to be some variation in their anti-diuretic properties. It is wise, therefore, for accurate comparative observations to be made upon the urinary output when the same quantities of different makes of pituitary extracts are injected.

Frequent injections may be avoided by adopting Strauch's method of repository injections. Strauch[5] injected eight times the usual dose of pituitary extract of fifteen times the usual strength. The formula he used consisted of 19 c.cm. of the extract emulsified with 2.5 c.cm. of olive oil, 0.2 gram of metacholestearin, and 0.3 gram of myricin. A single injection controlled thirst and diuresis from three to six days.

Fortunately the active principle, vasopressin, is absorbed through the nasal mucous membrane. This permits a variety of methods of administration—a nasal spray ; a pledget of lint soaked in pituitary extract placed in contact with the turbinate bones ; the use of a snuff consisting mainly of finely powdered pituitary gland which has been dried in acetone. The most popular method at present is the snuff, which, when taken every four hours, controls diuresis quite satisfactorily. Occasionally, however, this snuff causes asthma, probably due to the protein it contains. This complication can be met by using a snuff consisting of vasopressin 1 per cent. and lactose 99 per cent.

An extract of the pars intermedia containing a substance which acts neither upon the muscle of the uterus nor upon the blood vessels, but possesses a powerful action upon melanophore cells, has been alleged to control diuresis[6] in diabetes insipidus when injected in doses of 1,000 phoxinus units. This substance, which has been called "intermedin," has failed even in larger doses in several cases.[7] It has been suggested that when it controls diuresis it is due to a contamination with vasopressin.

Xanthomatosis

Vasopressin diminishes the cholesterol content of the blood following a meal rich in fat, and a deficiency of it is associated with hypercholesterolaemia, which, in turn, may lead to a deposit of cholesterol not only in the bones but also in the posterior lobe of the pituitary gland, thus establishing a vicious circle. It follows, therefore, that those cases of diabetes insipidus with hypercholesterolaemia not only should be given as much vasopressin as they can stand, but also should be placed upon a diet poor in fat and rich in carbohydrate, and perhaps be given some insulin. In addition, *x*-ray therapy should be applied to the sella turcica, since the rays are found to disperse deposits of cholesterol in bones.

Hypoglycaemia

On theoretical grounds pituitary extract is preferable to adrenaline in the treatment of hypoglycaemia, because adrenaline has been poured out into the blood automatically upon the sugar content falling ; its action is to liberate sugar from the glycogen in the liver, whereas vasopressin has a distinctly antagonistic or neutralizing effect upon insulin. Ten units is the usual dose of pitressin administered in hypoglycaemic coma.

Paralytic Ileus

It has been mentioned above that, following the injection of pituitary extract or vasopressin in the treatment of diabetes mellitus, an action of the bowels is an annoying accessory effect. In certain conditions this property of pituitary extract may prove of great value. Vasopressin in small doses—3 to 5 units—tends to maintain the tone of the bowels, thus preventing an accumulation of gas. Larger doses cause active peristalsis and may give rise to pain ; it is therefore wiser to give repeated small doses at intervals of four hours. It is scarcely necessary to add that on no account may pituitary extract be administered if there is the faintest suspicion of mechanical obstruction.

Circulatory Failure

Since pituitary extract acts directly upon the plain muscle of the blood vessels it may prove of great value in combating collapse provided the heart muscle is normal. It has been used in shock and also in cases of severe pneumonia, in which blood pressure has been low.

Haemoptysis

Vasopressin has been prescribed in haemoptysis,[8] because it not only increases the coagulability of the blood,[9] provided no great volume of blood has been lost, but also is alleged to reduce the pressure of the blood in the pulmonary circulation. This latter action has not been proved in man. In some animals it reduces the flow of blood through the coronary arteries, and thus diminishes the strength of the heart beat, and since it does not constrict the pulmonary vessels the blood pressure falls.[10] In the cat, however, the effect is the reverse ; it increases the flow of blood through the coronary vessels and the pulmonary blood pressure rises.

If vasopressin is proved to reduce the blood pressure in the pulmonary circulation in man it should be preferable to aconite, which has a similar effect. Aconite, however, in addition causes a fall of blood pressure in the systemic circulation, and thus makes the patient feel faint.

Asthma

Pituitary extract was introduced as a treatment for asthma because it was supposed to relax smooth[11] muscle fibres. This is at least doubtful. The view taken at present is that pituitary extract increases and prolongs the action of adrenaline, and since there is no physiological action to account for this it is alleged to sensitize the tissues to the action of adrenaline.

Until some satisfactory explanation for its alleged beneficial action in haemoptysis and asthma is forthcoming pituitary extract should be employed only when very careful observations can be made, and these should be recorded with the object of establishing or exploding its claim to utility in these conditions.

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A. Mouchet (*Presse Méd.*, September 16th, 1936, p. 1449), who records an illustrative case, states that in forty-five cases of operation for typhoid peritonitis which have been published since 1924 the recovery rate was 51 per cent. This figure is lower than that recorded in 1933 by Soupault, who had a recovery rate of 77 per cent. Mouchet, however, has excluded cases of peritonitis without perforation and localized peritonitis, which is sufficient to account for the difference in the results. The recovery rate in Mouchet's series is higher than that of 38 per cent. recorded by Gueullette in 1924, of 30 per cent. by Lenormant in 1931, and of 17 per cent. by Jaki in 1925. Mouchet's case is that of a girl aged 18, in whom laparotomy was performed on November 18th under ether anaesthesia by a subumbilical incision, in the second week of typhoid fever. Perforation was found in the ileum, 25 cm. from the caecum, and an enterostomy performed by Witzel's method. On February 4th the enterostomy wound was closed and complete recovery took place.

PUBLIC HEALTH CONGRESS

OPENING BY SIR KINGSLEY WOOD

The Public Health Congress and Exhibition at the Royal Agricultural Hall, Islington, which is promoted by a council including representatives of the Ministry of Health and of bodies interested in local government, was opened on November 16th and closes to-day (Saturday). The exhibition has brought together a large assemblage of public health and sanitary equipment. A noteworthy display is that of the Department of Scientific and Industrial Research, which includes demonstrations relating to the purification of water, the treatment of sewage, the heating, ventilation, and lighting of buildings, and the reduction of noise therein, the handling and storage of foodstuffs, the protection of *x*-ray and radium workers, and the nature and measurement of atmospheric pollution. A display of a different character is of some most dextrous handwork of all kinds produced by patients at various institutions for mental defectives.

The MINISTER OF HEALTH (the Right Hon. Sir Kingsley Wood, M.P.), at the opening ceremony, referred to the wider outlook and policy of public health. In the reign of Queen Victoria attention was chiefly directed to the improvement of environmental conditions, and drainage, sewerage, and administration dealing with certain common pestilences had first place. In the reign of the late King and his predecessor prevention was the dominating note, as instanced in the organization for child welfare, the measures taken to prevent tuberculosis, and the insurance medical service. In the new reign he felt they were on the threshold of a greater conception—that of health-building. The latest report of the Registrar-General, published that morning, had many gratifying features ; new low levels were touched by the death rate, general and infantile, and the incidence of infectious diseases. Two diseases were still formidable enemies: rheumatism and cancer ; but there was growing evidence that not only was suffering alleviated, but cures were obtained if certain early steps were taken. Rheumatism among insured males was responsible for 16 per cent. of the total sickness and disablement. The reduction in the mortality ascribed to rheumatism, especially in the younger age groups, was gratifying, but it seemed that the more insidious forms of active rheumatism became relatively more important as the more classic forms decreased. It should be more widely known that in rheumatoid arthritis successful results could be accomplished by early diagnosis and prompt and appropriate treatment.

With regard to cancer (the Minister continued), from which some 60,000 people died every year and at any time about 100,000 people were suffering, research was proceeding steadily, and in radium and deep *x*-ray therapy and operative treatment there were means of curing or alleviating a higher proportion of cases than was often supposed, so that it was untrue that the diagnosis of cancer was necessarily a death sentence. But he was convinced that more could and must be done to secure that more cases and at an earlier stage in the disease were submitted to treatment by modern methods. He also touched briefly on dental health, on the Government's proposals for improving the physique of the nation, and on the provision of recreative facilities.

The Rise of the Medical Officer of Health

The inaugural address of the Congress was delivered on Monday afternoon by Sir ARTHUR MACNALTY, Chief Medical Officer, Ministry of Health and Board of Education. He began by remarking that the post of medical officer of health of a county or county borough was one of great importance and responsibility.

"The signs of the times are in favour of augmenting rather than curtailing its duties and influence. Medical officers of health have become an essential feature of our social structure —so essential, indeed, that no enlightened citizen can visualize being without them. Yet the first medical officer of health was appointed less than a century ago, and the appointment has only been a compulsory one within the lifetime of many of us. Its official functions have increased and altered within a brief time. In the strong light of hygienic interest the status of the medical guardian of the public health has taken on a new meaning, and his primarily simple activities have been reoriented in complex directions. It is not unprofitable to trace the steps whereby this evolution has taken place. It is a narrative inseparably bound up with the progress of public health, and has a message for the future application and organization of medical knowledge and hygiene to the service of the community."

He then traced the history of the medical officer of health from 1846, when Liverpool secured a short Act of Parliament, one of whose provisions was that the town council might appoint and salary such an official. Thus Liverpool had the first medical officer of health, Dr. Duncan, who held the office for sixteen years, and in 1848 Sir (then Dr.) John Simon was appointed to a similar office in the City of London, and was the first medical officer of health, he believed, to write annual reports. The speaker indicated some of the landmarks in public health history which affected, and in most cases enhanced, the medical officer's position—the foundation of the Local Government Board in 1871, the creation of county councils in 1888, the institution of the school medical service in 1907, the advent of national health insurance in 1911, which so far from diminishing the role of the medical officer added to his responsibilities, especially in connexion with tuberculosis, a service which was followed by two other State services planned on similar lines—the maternity and child welfare service, and the scheme for the prevention and treatment of venereal disease. In 1919 came the Ministry of Health, and in 1929 the Local Government Act, which again widened the duties and responsibilities of the medical officer.

In conclusion Sir Arthur MacNalty said:

"The medical officer of health is no longer a minor sanitary official—the man with the muck rake. He is responsible for the prevention, and in great part for the treatment, of disease in all its protean forms. Much is asked of him. In addition to personal qualities and high qualifications, he must be an able administrator and be acquainted from past experience with medicine, surgery, and obstetrics. We have traced the rise of the medical officer of health to his present position ; he must never descend from it. To maintain it the need is as urgent as ever for the best men in the medical profession to adopt the calling of public health. The position carries with it untold opportunities for doing good to one's fellow men, and it is full of interest from the point of view of every branch of medicine. It is a noble, generous, and kindly profession, and those coming after us must maintain its influence and high traditions."

Dental Disease and the National Health

The first discussion held under the auspices of the British Dental Association was on "Dental Disease and the National Health," with Mr. F. J. PEARCE, president of the association, in the chair. Sir NORMAN BENNETT, in an opening paper, referred to the incompleteness of the school dental service, which, he said, did not touch more than the fringe of the problem. In terms of whole-time service there were now nearly 700 school dentists. Sir George Newman had calculated that more than 2,000 would be required for a comprehensive and efficient service capable of turning out every child from the elementary schools dentally fit at the end of school life. This was more than the profession could immediately provide, but if maternal and pre-school treatment were more efficient, and more were done by teaching and propaganda, school dental treatment might be reduced to manageable proportions, and about twice the present number of dentists be required to keep healthy the mouths of all elementary and secondary school children. "There is no real reason why this number should not be much reduced, for there is nothing that stands in the way of the people of this country having mouths comparable with those of the inhabitants of Tristan da Cunha, where dentists are scarcely required, except ignorance, custom, and economic stress."

In some discussion following Sir Norman Bennett's paper Sir FRANCIS ACLAND, M.P., chairman of the Dental Board, said that there was one school dentist to about 7,000 children in the elementary schools of England and Wales, and the number, according to Sir George Newman's estimate, ought to be one to every 2,500. Even that was only half as good as Russia, where there was one dentist to every 1,250 of the school population. He also pointed out the seriousness of the gap between school-leaving age and the earliest age at which dental benefit was possible—namely, 18½. Those four and a half critical years of growth were left unregarded. He thought it would pay approved societies to say to their young members, "If you come to us with a clean mouth and will continue to pay regular visits to the dentist we will meet the whole of the dentist's charges." Captain G. S. ELLISTON, M.P., considered that Sir Norman Bennett was over-optimistic as to the results of propaganda. His own experience, gathered from health departments in all parts of the country, was that the results were disappointing. Local authorities in their provision of dental treatment were being defeated by the persistent ignorance of the people. He was beginning to ask himself whether propaganda was enough. Health departments could take proceedings against parents who wilfully refused to accept treatment for their children when such refusal endangered health. An occasional conviction in flagrant cases might help parents to realize that sound dental conditions were an important factor in the health of their children. Dr. ELWIN NASH, medical officer of health for Heston and Isleworth, described the work of his orthodontic clinic, the only one, he believed, run by a local authority, which had just completed its thousandth case. He illustrated by lantern slides of dental models the valuable treatment performed for dental deformities in children. He had found mothers who had a dental deformity extremely anxious to prevent its recurrence in their offspring.

Anti-Gas Devices

A feature of both the congress and the exhibition was the interest shown in anti-gas instruction and apparatus. A paper was read on the subject by Mr. R. NICHOLAS, city engineer and surveyor of Sheffield, who showed what an extensive organization was required, particularly in the large towns. It comprised medical, police, fire, and engineering and cleansing departments. In the scheme he exhibited to the congress the constituents of the medical department were hospitals, first-aid posts, first-aid parties, and ambulances. In the exhibition two firms demonstrated methods of dealing with gas by atomizers and sprays, and another showed an anti-gas van equipped with suits, respirators, and chemical neutralizers. There were also devices for spraying road surfaces with a fluid able to render harmless the heavier forms of poison gas and to attack gas in the air, the antidote being flung several feet above the highest possible gas level.

RESEARCH FELLOWSHIPS IN TROPICAL MEDICINE

The Medical Research Council, on the advice of its Tropical Medical Research Committee, has made the following awards:

Senior Fellowships: Frederick Murgatroyd, M.D.Liverp., M.R.C.P., D.T.M., Lecturer in the Liverpool School of Tropical Medicine; Cecil Hackett, M.D.Adelaide, M.R.C.P., D.T.M. and H., recently engaged in investigations in the Northern Territory of Australia. These are tenable for three years, for investigations to be made mainly in the Tropics. Dr. Murgatroyd will work in West Africa on the chemotherapeutic treatment of trypanosomiasis, and Dr. Hackett in East Africa on the pathology and clinical manifestations of yaws.

Junior Fellowships: Gilbert Bowman Ludlam, M.B., Ch.B.Ed., D.L.O., Clinical Assistant, Sheffield Royal Hospital; Joel Nathan Strauss, M.B., Ch.B.Manch., M.R.C.P., late house-physician, Hospital for Tropical Diseases, London. These are also tenable for three years, during the first two of which the holders will undergo training in this country in tropical medicine and in the use of research methods.

Reports of Societies

IMPACTED WISDOM TEETH

At a meeting of the Medical Society of London on November 9th, Sir WILLIAM WILLCOX presiding, the subject of discussion was impacted wisdom teeth.

Mr. C. BOWDLER HENRY, who introduced the subject, confined himself to the mandibular tooth, leaving the upper wisdom tooth out of the consideration, although this was also subject to impaction and total inclusion within the maxilla. The ordinary impacted wisdom tooth appeared commonly as a horizontal impaction against the second molar, but there were other types, including a vertically placed wisdom tooth which would be a functioning tooth if the jaw allowed it, a depressed vertical, a disto-oblique, and a meso-oblique, in which last the tooth was tilted forward against the distal surface of the second molar. Another type sometimes referred to was soft tissue impaction, in which the vertical third molar had nearly or even entirely escaped from the bone but not from the covering of gum lying about its occlusal surface. Lingual deflection and displacement of the tooth right up in the coronoid process were also seen. Double impactions were found in which not only was the third molar impacted, but the second molar was also impacted against the first; and, finally, there were the supernumerary teeth. Various conditions of ill-health, certainly local neuralgia, might arise as a result of pressure apart from infection. The conditions to which sepsis from a wisdom tooth was liable to give rise were surprisingly numerous and varied. As a result of a request he made through the medical and dental journals a year or two ago he had had 311 cases reported to him, and the complications were so amazing, involving so many systems of the body, that he set himself to go through the literature, and found many more. He exhibited an analysis of these, the ages of the patients ranging from 14 to 84, the sex incidence being about equal, and the conditions varying from the comparatively trivial to the most serious, including even mental disorder. There were also not uncommonly the results of accidents associated with previous attempts at removal of the tooth, including broken-off portions of instruments buried in the tissues of the jaw, and again there were pathological fractures and fractures due to external blows.

In discussing treatment he described the modern method of splitting the tooth, taking away the crown, and then drawing each fragment into the place which the crown had left. He then gave a long dissertation on the aetiology, with many examples from comparative anatomy, illustrating the development of the molar tooth and the factors which in man tended to promote impaction. A number of people, he said, had no wisdom teeth, and they were fortunate, for they were better off without them. He had collected radiographs of the molars in 500 students and 300 children, some of which showed how the third molar, even in the developmental stage, was thrown over, a condition which could not possibly arise unless there was an abnormal growth of bone. The earlier a case was taken in hand the simpler it was from an operative point of view, but, of course, it was more difficult from a diagnostic point of view to say that it was necessary to remove the tooth. The third molar eventually went deeply into the root of the coronoid process, as bone was built over it and the crown was formed, but in its early stages of development it did not go deeply into the root, being merely a cell open to the surface. The operation for removal at this stage was a simple one, done under intratracheal anaesthesia and with ordinary aseptic precautions. In his practice he was accustomed to perform it on young children on a Friday afternoon, the child going home the following afternoon, and coming to see him on the Tuesday morning, by which time the wound had healed by first intention. The problem was in many such children to justify the removal of the tooth unless the tooth was tilted over and there was seen to be so much molar

crowding that there was no hope of it getting through. But it was much better to do the non-traumatic operation at that time than to wait until the child was 13 or 15, when it became a big operation, owing to the depth at which the tooth was situated and the size of its calcified mass.

General Discussion

Dr. E. W. FISH said that this branch had developed during the last ten or fifteen years as much as any other branch of surgery. The operation had become one of precision, following an exact line of technique. So far as the early treatment which Mr. Henry had advocated was concerned—namely, the removal of the germ of the third molar in the young child—nobody could have any doubt that if it were possible to make a selection of cases that was the best thing to do. The operation on the third molar once it had become the seat of sepsis was always fraught with a certain amount of danger. If the condition could be dealt with while the child was young it would be a great boon. Even if, had the tooth been allowed to develop, impaction would not have followed, the individual would not suffer at all by its removal, for the third molar was never worth anything under modern conditions of diet. Mr. C. P. G. WAKELEY said that the cases which first called his attention to the condition were the neuralgias. Some of these high impacted thirds were often missed, but they were seen under *x* rays. He had seen Mr. Henry's operation for removing the dental follicle, and he was sure it was one of the operations which had come to stay. In the future perhaps every child would be submitted to an *x*-ray examination of the jaw to see what was happening to the third molar follicle. Dr. G. T. CALTHROP, as a radiologist, added his meed of admiration for Mr. Henry's work, and said that it was certainly astonishing what a number of cases of impacted third molar were seen under *x* rays.

Sir WILLIAM WILLCOX said that it seemed clear that the wisdom teeth were very little used. In evolution the snout had become shorter, with the result that in the human the third molar tooth was often really a source of danger. The operation which Mr. Henry had described was a very simple and quite safe one. Every clinician had seen serious conditions arise as a result of infected impacted wisdom teeth in adults, and, as Mr. Henry had said, cases of insanity might even be caused. He had seen epilepsy in young people which was undoubtedly due to such infection, also all the various manifestations of dental sepsis, such as arthritis and chronic rheumatism. He mentioned the case of a clergyman, aged 55, who suffered from high blood pressure and headache, so much so that his retirement was contemplated because he was unable to cope with his work; but an impacted wisdom tooth was found and removed, and thereupon his blood pressure fell to normal and he was now in vigorous work in his parish.

Mr. BOWDLER HENRY said that the operation he had described was not for the ordinary dental practitioner, but only for those who had the opportunity of following it out under ideal conditions. He advocated that children should be radiographed from the age of 7 onwards at yearly intervals. If they were so placed that they could not be operated on under proper conditions one should make the best of a bad job and choose an anterior tooth for removal, thereby giving a passable, though not an ideal, result.

At the scientific meeting of the Zoological Society of London on November 3rd, among other communications Mr. C. G. Johnson reported on the relative values of man, mouse, and domestic fowl as experimental hosts for the bed-bug *Cimex lectularius* Linn; and Mr. F. L. Vanderplank on the growth and dentition of an infant chimpanzee in the Bristol Zoological Gardens. Mr. H. Munro Fox submitted Part I of his study on the metabolism of poikilothermal animals in different lattitudes, and Dr. P. Manson-Bahr exhibited and made remarks upon a series of slides illustrating his work in pioneer bird photography.

URINARY ANTISEPTICS

The Sections of Therapeutics and of Urology of the Royal Society of Medicine held a combined meeting on November 10th for a discussion on urinary antiseptics, including sodium and ammonium mandelate. Dr. DOROTHY C. HARE occupied the chair.

Dr. M. L. ROSENHEIM said that the definition of urinary antiseptics as "drugs given internally in order to render the urine bactericidal" excluded from the discussion drugs used for local lavage. No branch of chemotherapy had attracted so much attention as the problem of urinary antisepsis. The ideal urinary antiseptic for administration by mouth produced no gastric irritation, no toxic symptoms, was readily absorbed from the gut, readily excreted in the urine, caused no renal irritation, rendered the urine bactericidal in low concentration, acted from the renal pelvis downwards, was active in either acid or alkaline urine, was safe for use in febrile patients, and acted on all causative organisms of urinary infections. There was no such ideal antiseptic. Drugs had been given by the mouth in cases of urinary infection with three main objects: to render the urine more alkaline or more acid, or to render it bactericidal apart from its reaction. Potassium citrate could not be regarded as a urinary antiseptic. Its undoubted value in acute febrile cases was not due to any bactericidal action, and alkalis were of no value in the treatment of the chronic afebrile case. In practice it was accepted that acidifying agents by themselves were unable to cure urinary infections. Mineral acids given by the mouth had long been regarded as ineffective. Acid sodium phosphate had been convincingly shown to have little value as a urinary acidifying agent, but the ammonium salt of mandelic acid was excellent in this respect.

The various drugs given by the mouth to render the urine antiseptic were too numerous to mention. Few had survived the test of prolonged clinical trial. The acclamation which greeted the introduction of the ketogenic diet indicated the dissatisfaction which was felt with the available urinary antiseptics. This was introduced in 1931 and produced excellent results, and many patients with hitherto intractable urinary infections were cured. It was soon realized that it did not act merely by making the urine acid, but that there was present some specific bactericidal agent. But the ketogenic diet had many drawbacks, and never obtained the popularity in this country which it held in the United States.

Like most urinary antiseptics, mandelic acid was introduced on the strength of laboratory experiments, but, unlike most, its experimental claims were supported by clinical results. Mandelic acid was only active in acid urine. In carrying out treatment with this antiseptic it was necessary to get the urine really acid. Ammonium mandelate was an effective acidifying agent. In only occasional cases was it necessary to give additional ammonium chloride in order to make the urine really acid.

On contrasting sodium and ammonium mandelate with the postulates of the ideal urinary antiseptic it would be found that both salts differed from the ideal in four main respects: (1) in the presence of renal failure the acidifying salts had a definite cumulative effect, producing a considerable degree of acidity, and the treatment was therefore contraindicated in the presence of a raised blood urea; (2) the new treatment was only active in acid urine, and as a result (3) it had no effect on organisms which were capable of splitting urea and which could maintain a constantly alkaline urine; (4) finally, in his opinion, mandelic acid should not be used in acute febrile cases of urinary infection. It was better first to reduce the temperature with alkalis, and then to clear up the residual infection with mandelic acid. Ammonium mandelate was therefore not the ideal urinary antiseptic, but in selected cases it produced rapid and satisfactory results. It demanded careful supervision of the patient, and there appeared to be grave danger that the treatment might become over-simplified.

Mandelic Acid and its Derivatives

Mr. E. W. RICHES referred to the last combined discussion on this subject, which took place nearly eight years ago. It was then agreed that both the subject and the discussion were disappointing, one speaker (Mr. Swift Joly) attributing the disappointment to the fact that practically no antiseptic was of value at the kidney level. At that discussion no fewer than twelve urinary antiseptics were named, whereas attention was now fixed on mandelic acid and its derivatives. In surgical practice cases with an infected urine fell into three main groups: pre-operative, post-operative, and those in which no operation would be done. Most of the cases in the third group could be cured ; in many of those in the first group the urine could be rendered sterile before operation, and in cases in the second group the complete cure after an operation could be expedited by the use of mandelic acid. While most would be agreed that chronic cases could be safely treated by mandelates there was considerable difference of opinion as to the advisability of treating in this way the acute fulminating case. He still preferred to start the treatment of acute cases with alkalis. The symptoms would usually abate if sufficient alkalis were given, and that was the time to start treatment, but if the case failed to respond to alkalis he would give the mandelic acid. The failure of mandelic acid to procure sterility in the upper urinary tract was often an indication of the presence of another lesion. In cases where renal stone had been removed infection sometimes tended to persist, and here again mandelic acid had been of use in clearing it up. Gynaecological operations were frequently followed by cystitis and resistance to efforts at sterilization of the urine. He had tried most of the proprietary preparations, but ammonium mandelate in the form of elixir seemed the most potent and reliable. Ammonium chloride was to be avoided because of the often unpleasant side-effects produced by it. The cost of the treatment was worth consideration. A fortnight's treatment with the proprietary preparations cost from 25s. to £2 2s. The organism most responsive to treatment was *B. coli communis*, and the most resistant was *B. proteus*. The presence of gross pus was a cause of failure, and the absence of an obstructive lesion of the urinary tract was essential for permanent cure. In view of the high percentage of cures in simple infections he had made it a rule that a case of apparently simple infection failing to respond after two weeks' treatment must have a complete urological investigation. If this proved negative treatment might be continued, attention being paid to the gastro-intestinal tract and the pelvic organs, particularly in women.

Mr. A. W. CUBITT followed with some statistics from the urological department of Middlesex Hospital ; the cases were few in number, but well varied. The total of cases was fifty-one, of which seventeen had been followed up for periods exceeding six months, in some cases up to thirteen months. They had been treated with mandelic acid. In forty-five of the cases the urine was sterilized to *B. coli* and in six cases not sterilized. In nine cases which had been sterilized there was recurrence, proved bacteriologically in seven and suspected from symptoms in two. Many of the other cases were quite recent, and some of them would undoubtedly recur, so that the recurrence rate would be higher than it appeared. On the other hand, recurrence of symptoms was not necessarily an indication of recurrence of infection. Out of twenty-seven of the cases in which there was pure *B. coli* infection with no gross lesion twenty-six were sterilized. Of the cases of pure *B. coli* infection with some gross lesion treated pre-operatively three out of four were sterilized, and of those treated post-operatively six out of eight. Of nine cases of infection with *B. coli* plus other organisms six were sterilized to *B. coli*. Of seventeen cases which had been followed up for over five months, in eleven the urine remained sterile and in six the infection recurred.

Mandelic Acid Treatment in Children

Dr. W. W. PAYNE brought forward results obtained at the Hospital for Sick Children, the ages of the patients ranging from 6 months to 12 years. Cases of which there was no satisfactory laboratory record of preceding infection of at least two weeks' duration were excluded, as were cases in the acute febrile state, but a fair number of the cases were having febrile periods. The sole criterion of success was a persistently sterile urine. Relapses had not been very common. The method of treatment was ketogenic diet, hexamine (the cheapest and easiest treatment), and ammonium mandelate. The following two prescriptions had been used as the standard, and were palatable enough, the mixture of ammonium phosphate being almost pleasant to take:

Mistura Ammonii Mandel.

℞	Ammonium mandelate	gr. 26
	Liquid extract of liquorice	♏ 5
	Elixir of gluside	♏ 1/5
	Water	to ʒ 1

Mistura Ammonii Phosphas

℞	Ammonium phosphate	gr. 7½
	Liquid extract of liquorice	♏ 5
	Acid syrup	♏ 15
	Water	to ʒ 1

There was no doubt that the ammonium mandelate was the best form, but it was sometimes necessary to give extra acidifying ammonium salts. The dosage for children up to 6 months was 30 grains daily ; up to 2 years, 30 to 60 grains ; from 2 to 5 years, 60 to 90 grains ; and from 5 to 12 years, 90 to 120 grains. In discussing results Dr. Payne expressed the view that if as much care were taken with hexamine treatment as with mandelic acid equally good results would be obtained, and the treatment had relative cheapness to recommend it. Ammonium mandelate might then be reserved for those able to pay for it and those whose condition failed to clear up with hexamine.

Dr. A. G. SIGNY, speaking as a bacteriologist, emphasized the fact that the children had to be carefully looked after from the intestinal point of view as they readily reinfected themselves. He agreed with Dr. Payne that hexamine was a very useful urinary antiseptic, and had the work on hexamine been done as carefully as the work on mandelic acid probably almost an equal success would have been obtained.

Dr. E. P. POULTON emphasized a point made by Dr. Payne that the treatment before the introduction of mandelic acid was not so extraordinarily bad. Ketogenic diet was used in Copenhagen and afterwards given up, and the treatment with calcium chloride was introduced with salol as an antiseptic. When he heard of this work he began to treat patients on those lines, and he would have said that on the whole, without making a special study of it, these chronic infections were not to be regarded as a particular problem. He thought hexamine would be a much better antiseptic to use than the salol used by the Danish workers. A parallel series of treatments by the two methods should be carried out. He wondered why Mr. Riches had used potassium citrate as the alkalizing agent in preference to sodium bicarbonate. If the latter had been used he thought the temperature might have come down earlier. Mr. RICHES replied that he did not know why he used potassium citrate in that particular case, but he had used the bicarbonate, and he did not know whether the one was more efficient as an alkalizing agent than the other.

Mandelic Acid and B. coli Infections

Mr. CLIFFORD MORSON mentioned that at St. Peter's it had never been found possible to alkalize the urine with potassium citrate ; they always used the sodium or potassium bicarbonate. He went on to say that a large number of drugs had been used as urinary antiseptics which had no justifiable claim to that description. He assumed, however, that the particular object of the present discussion was to bring into the limelight the results of mandelic acid treatment. During the past twelve months a careful study of the effect of mandelic acid upon *B. coli* infections had been made at Whipps Cross Hospital. He had found the salts of mandelic

acid sold under various trade names less effective than the acid itself, with the *p*H of the urine controlled by ammonium chloride. The method of administration was that described by Dr. Rosenheim. Sixty cases had been treated at the hospital, to which he was able to add sixteen from his private practice. Out of fifty cases of primary *B. coli* infection, half of which had been treated previously with alkalis without success, in thirty-four the urine became sterile and free from abnormal constituents in one course of treatment; in seven cases the urine became sterile after a second course, and nine remained unaffected. Ten cases of pyelitis as a complication of pregnancy were also treated, and seven had a normal urine after a ten-day course of treatment, two were failures, and one patient discharged herself before the termination of treatment because she disliked the drug so much. In none of these cases was there evidence of damage to the kidneys from the acidity of the urine. A different story had to be told of cases coming under the heading of infection as a complication of surgical lesion of the urinary tract, particularly those with prostatic obstruction. It was necessary, in cases of lower urinary tract infection, to differentiate between a primary cystitis and that which was secondary to a chronic pyelonephritis. In the former, with an operation following the most modern technique, and no infection in the bladder wall, the trouble would clear up, but the opposite was the case in the second group. He had treated five cases in which the kidney was infected with *Staph. pyogenes*, with a negative result.

Mr. DICKSON WRIGHT mentioned that one of his patients, who was normally slightly deaf, became almost stone deaf while on mandelic acid, and it had been shown that mandelic acid was the cause of it, not the ammonium chloride. Another patient—a chemist—had noted that the acidity of his urine in the evening was only half what it was in the morning. Possibly an appreciation of that fact might help to cut the treatment shorter. Mr. BERNARD J. WARD said that it was stimulating to hear one speaker after another declare that *B. coli* no longer had any terrors. So far as the cure of *B. coli* infection was concerned he had felt himself utterly helpless, and naturally when he first heard of Dr. Rosenheim's treatment with mandelic acid he remained a sceptic, but when he started to treat some of his more obstinate cases of *B. coli* infection with mandelic acid he rapidly became enthusiastic, and so remained.

Mr. JOHN EVERIDGE said that he was glad to hear attention called to the value of intravenous hexamine treatment. Treatment by cylotropin (hexamine sodium salicylate) had not become so popular in this country as on the Continent and in many of the colonies, but it was of great value in the treatment of acute *B. coli* infection, particularly of the upper urinary tract. It was specially useful in certain forms of pyelitis and in dealing with patients who on the passage of bougies after the stricture was dilated always got rigors. Dr. DOROTHY HARE raised the question as to how long a period should elapse between the last dose of the mandelic preparation and the culture of the urine in order to be quite certain that it was actually sterile. Mr. OGIER WARD said that not every patient could stand treatment with mandelic acid. A good many people were nauseated by it and abandoned it. He gave a description of a case which had yielded rapidly to mandelix.

VOLUNTARY EUTHANASIA

The Hunterian Society of London staged a full-dress debate at Cutlers' Hall on November 16th, Mr. H. L. ATTWATER presiding, on the proposition "That the practice of voluntary euthanasia would be unjustifiable." Dr. KILLICK MILLARD, honorary secretary of the Euthanasia Legalization Society, first made a brief statement concerning the Bill now before the House of Lords, the second reading of which is fixed for December 1st. Euthanasia, he said, meant literally "easy death," and voluntary euthanasia was euthanasia expressly desired by the sufferer. It was not contemplated to extend the provision to imbeciles and idiots or to persons who could not decide for themselves. It was for people suffering from mortal disease and condemned, as many were, to endure severe pain. The problem was not essentially medical, theological, or legal; it was a sociological question, and he believed that the substitution of a quick and painless death in such cases for a death which was slow and agonizing would be regarded hereafter as one of the great reforms of the age.

Arguments For and Against

Dr. G. ROCHE LYNCH, who opened the discussion as a critic on various grounds of the proposed legalization, expressly desired that his remarks should not be reported, although he was speaking in his personal capacity, and not as connected with the Home Office. Canon HAROLD ANSON, Master of the Temple, found it difficult to understand on what ground the opposition to the Bill relied. It had been said that euthanasia was now constantly practised by the medical profession, and that there was no difficulty in a patient obtaining it, if he desired, from his doctor. On the other hand, other doctors described as monstrous the suggestion that euthanasia was practised. But if those were right who said it was constantly being done, surely the position was much more fraught with criminal possibilities than if euthanasia were carried out openly and by legal process. Nothing could be more unsatisfactory than to leave it to the discretion of the doctor to practise in a secret way.

Mr. GILBERT RYLE, a teacher of philosophy, opposed the legalization of euthanasia on philosophic grounds. No definition of the circumstances in which euthanasia was to be given could possibly be watertight. No rule could be formulated that in certain conditions it was to be given and in others not. Moreover, a patient might in a fit of melancholy express a desire for euthanasia, and withdraw it on the return of a more normal mood. Who was to say when he signed the necessary document that he was not in a state of temporary melancholia? There was also the possibility that some kind of intimidation or blackmail might be employed. Euthanasia was only to be granted in extreme pain and when death was certain; but those were only phrases of degree. How probable must death be for the euthanasia committee to say that it was certain? At the same time, this speaker admitted a reservation. Moral laws held good on nine occasions out of ten, but now and then they broke down when there was a conflict of obligation. There would always be marginal cases where it might be the duty of a friend to facilitate another's suicide, and sometimes the doctor might stand in that relation to his patient, and rightfully encourage him to abbreviate his life. But that was not inconsistent with his main proposition that any attempt to set up rules legalizing or conventionalizing euthanasia must necessarily fail.

Sir WALTER LANGDON-BROWN said that when he was a boy cremation was regarded with horror, but now it was common practice. Charles Bradlaugh and Mrs. Besant were in prison for advocating birth control, but now the Ministry of Health issued circulars on the subject. Public opinion moved—slowly, it was true, but it moved. The idea of voluntary euthanasia was not new; John Donne, dean of St. Paul's, wrote an essay in support of it in 1624. He was glad the Bill was to be debated, though he was indifferent to its fate; it would be a mistake to try to rush things. On the general question he asked whether it was logical to conscript a young man and subject him to the risk of torture and mutilation in war and probable death, and refuse to an old man escape from an agonizing end. He had noted two types of reaction in face of death: one was a desire to have anything done which would prolong life, and there the physician's duty was clear; the other was a desire to be spared unnecessary suffering, and there the doctor should surely not try to prolong life if the position was hopeless. The repeated giving of morphine might reduce the patient to an inert log, and surely there were worse things than death, one of them being that a man should sink to something lower than an animal existence, a purely vegetative state.

General Discussion

Dr. N. PINES asked what would be thought of a surgeon who refused an anaesthetic to his patient during an operation. The medical profession should not refuse its help to one who asked for it in the face of that biggest operation of all—death. Rabelais said, "Happy is the physician who is called at the end of a disease," but this was not applicable to euthanasia, where the physician had to make his decision against all the training and tradition of his profession. Nevertheless, within well-defined limits euthanasia was justifiable. The possibility of a medical mistake must, of course, be absolutely excluded; the disease must be advanced, very painful, and in an obviously terminal stage; while the patient must be mentally clear, sufficiently courageous to be told the truth about his position, and nothing must be done without his knowledge. Mr. WILLIAM IBBOTSON spoke of the severe pain which many patients suffered, especially in cancer of the throat, and he recalled a phrase of Carlyle: "Not a tortured death, but a quiet euthanasia."

Dr. P. B. SPURGIN, on the other hand, declared euthanasia to be contrary to all the tenets of the profession. The patient was said to be suffering from intolerable pain. Who was to judge whether the pain was intolerable? Certainly not the doctor. The patient thought he could judge, but he could not, for many patients, said to have suffered intolerable pain, would admit that, perhaps as the deadening effect of habit, the pain got less. The average practitioner set himself to alleviate suffering, but he did not employ euthanasia. Almost all patients clung to life, and the doctor's duty was to make that remainder of life as comfortable as possible. Pain unmitigated might end life sooner than pain mitigated. The doctor gave drugs, but in graduated doses, not to bring about death, but to ease pain, and the patient died eventually from exhaustion due to the disease, but in comfort instead of in agony. Dr. ALEX. ROCHE also held that the function of the doctor was to deaden pain, not to kill the patient.

In further discussion one general practitioner declared that he himself had administered euthanasia ever since he had been in practice, and he would go on doing it, whether it was legalized or not. No qualms of conscience troubled him; he was not getting anything out of it—indeed he lost a patient—but he was relieving a fellow human being of hopeless suffering. As to how to know when a patient was fit to die, he remarked cynically that that was easy—it was when he was left to his general practitioner, and all the specialists had done with him. This speech produced from another general practitioner an expression of "frank disgust" on hearing that surreptitious euthanasia existed to-day. It upset the whole relationship of doctor and patient. How could the patient have the same implicit trust in his doctor if this were possible? Another speaker, however, urged that, if anything, euthanasia would establish confidence between doctor and patient, the patient knowing that if pain became intolerable the doctor would do whatever was necessary. A member of the legal profession expressed the view that it was intolerable that any professional man should be placed in the dilemma of refusing to do what humanity dictated or to commit a breach of the law. Dr. E. STOLKIND asked who would be the referee. He feared that the referees would be officials who had forgotten all about clinical medicine.

Dr. KILLICK MILLARD, in replying to the discussion, explained that the procedure he would suggest would be for the patient to be put to sleep with something like evipan, and then for a lethal drug to be injected intravenously during unconsciousness. One speaker had suggested that euthanasia might be administered without the patient's knowledge, but that was not contemplated in the Bill. It would be the duty of whoever gave the euthanasia to ask the patient whether he still wished for it. Everything should be done with absolute openness.

In proposing a vote of thanks to the openers of the discussion, Professor GREY TURNER declared that he was now more opposed to the suggestion that euthanasia should be administered than he was when he entered the hall. He did not believe the Bill would go through; if it did it would be a dead letter.

Scotland

Edinburgh Royal Infirmary

In the annual report of the Royal Infirmary of Edinburgh for 1934–5 it is stated that the number of patients admitted during the year was 19,801, a considerable increase on the figure of 18,943 for the preceding year. The number of new out-patients, 67,583, also showed an increase, of 791. With regard to motor accident cases 366 were admitted to the wards, while 531 received treatment in the surgical out-patient department, these figures showing decreases of 68 and 69 respectively. Despite these declines, the police reports did not indicate any diminution in the number of road traffic accidents in the city and surrounding districts. Although under the provisions of the recent Road Traffic Acts the insurance companies are obliged to make payments towards the cost of maintenance of the patients in hospital, only a little more than half of the total cost is thus covered. The outstanding event of the year was the visit of the Duke and Duchess of Kent, when the Duke, in his capacity of Lord High Commissioner of the Church of Scotland, laid the foundation stone of the new maternity wing. Work is also in progress on the construction of a new nurses' home, and it is hoped that the full extension scheme, including also the new block for venereal diseases and the dermatological department, will be completed by May, 1937. The managers record with gratitude that, despite continued trade depression and resultant unemployment, a sum of more than £9,000 was contributed during the year by miners and oil workers engaged in the coal and shale fields within the area served by the Infirmary.

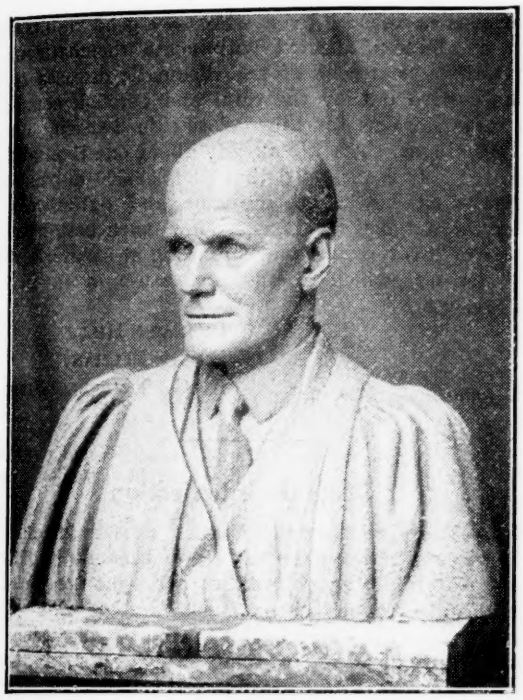
Weil's Disease Among Fish Workers

The annual report for 1935 of the medical officer of health for the City of Aberdeen records further progress in the researches of Professor L. S. P. Davidson and Dr. John Smith on the causation and incidence of Weil's disease in the city (see *British Medical Journal*, 1934, ii, 1137). In a series of forty-one cases during a period of eighteen months forty occurred among fish workers. There were only two deaths, giving a mortality rate of 5 per cent. as compared with roughly 10 per cent. on the Continent, and up to 50 per cent. in Japan in cases not treated with serum. In every case the onset was sudden, and the majority presented initial symptoms of headache, muscular pain, nausea, and vomiting. Conjunctivitis—"pink eye"—was only noted in 57 per cent. of the series, but the investigators stress the diagnostic importance of this sign, which may easily be missed when icterus is marked. With regard to distribution, the whole series of cases occurred in twenty-two premises in one particular area, two fish-curing establishments producing six cases each. The occurrence of several cases in the same premises within a few days of each other was thought to be attributable to increased rat infestation, due either to carelessness in refuse disposal or to a migration of the animals from other buildings where measures for eradication had been adopted. In the Aberdeen fish industry many of the businesses are small concerns, and for financial reasons the premises and equipment are often unsatisfactory. It is considered desirable that occupiers should be encouraged—if necessary, compelled—to adopt rat extermination methods, preferably under the municipal scheme, which entails constant supervision. Experiments were carried out to test the killing effect of sodium hypochlorite solution, marketed under the name of "chloros," on *L. icterohaemorrhagiae*, and it was found that this disinfectant can be used effectively on benches, utensils, and floors likely to be contaminated with living leptospirae from rats. The investigators conclude that infection is definitely contracted through association with infected water, which is so frequently present in premises used by workers among fish, and that the fish trade must be added to the occupations peculiarly liable to Weil's disease.

England and Wales

Memorial to Sir Walter Fletcher

The Medical Research Council recently invited the subscribers to the memorial fund to view Miss Dora Clarke's portrait-bust of the late Sir Walter Morley Fletcher, M.D., F.R.S., who served as Secretary of the Council from 1914 until his death in June, 1933. The ceremony was held on November 11th at the National Institute for Medical Research, Hampstead, in the library of which the bust is to be permanently placed. Lord Balfour of Burleigh, the new chairman of the Medical Research Council, presided, and the chief speakers were Professor G. M. Trevelyan, O.M., and Sir Frederick Gowland Hopkins, O.M., F.R.S. Professor Trevelyan paid tribute to the great qualities of mind and heart with which Walter Fletcher was endowed, and Sir Frederick Hopkins recalled his outstanding gifts as investigator, administrator, and



Bust of the late Sir Walter Fletcher

organizer in the service of medical research. The bust was formally accepted on behalf of the Institute by the director, Sir Henry Dale, F.R.S. The total amount contributed to the fund is over £2,300. The remainder, after meeting the cost of the personal memorial unveiled on Armistice Day, has been set apart for a Walter Fletcher Memorial Laboratory. This is being constructed at the Farm Laboratories of the National Institute at Mill Hill, and is to be used for research work in nutrition. The choice is most fitting. Walter Fletcher, in the later years of his fruitful life, became more and more convinced of the importance of nutrition as a prime factor in human well-being, and often urged the need for wider acknowledgement of this by those responsible for safeguarding the health of the people.

Papworth Tuberculosis Settlement

The new hospital for thoracic surgery at Papworth Village Settlement, containing twenty-two beds, has now been completed and brought into use. The medical director, Sir Pendrill Varrier-Jones, stresses as the aim of treatment the restoration of wage-earning capacity in order that those vital psychological factors whose chemical effects are repeatedly underestimated and are insufficiently understood may help rather than hinder the rebuilding of health. Every effort is made at Papworth to settle patients to work under conditions that resemble as far as possible the working life in the outside world, while maintaining facilities for adequate medical supervision. Financial considerations have unfortunately limited the scope of the scheme, and for the same reason the research department is unable to take full advantage of its unusually favourable opportunities. Many nurses who have contracted tuberculosis in the course of their duties come to Papworth as patients from all over the country. It is intended that these nurses, when they are sufficiently recovered to resume their calling, shall be accommodated in the new nurses' hostel. They will thus be able to carry on their work in the best possible environment, with expert medical supervision readily available. Papworth Industries continue to show an increase in net sales, purchases, and wages, and goods were exported to customers in Germany, France, Italy, Canada, U.S.A., and South Africa. Thirty thousand pieces of luggage were supplied. The village settlement encourages the civic spirit, which is often so lamentably lacking in new housing estates near our great cities.

New Tests for Milk

The Minister of Health has issued a pamphlet[1] giving directions for carrying out tests to ascertain whether milks entitled to be called "Tuberculin Tested," "Accredited," or "Pasteurized" comply with the prescribed standards for the bacterial content of such milks. Since June 1st, 1936, "Tuberculin Tested" milk has taken the place of "Certified" and "Grade A (Tuberculin Tested)" milks; and "Accredited" milk the place of "Grade A" milk. In place of the previous "plate-count" test the methylene-blue reduction test will be applicable to these milks from January 1st, 1937. Further, as under the old arrangements, there is a test for the presence of coliform bacilli. Pasteurized milk, whether "Tuberculin Tested" or not, must comply with a "plate-count" test. In order to pass the new methylene-blue test, milk, when tested in accordance with the prescribed method, must not decolorize methylene-blue within four and a half hours if the sample is taken between May 1st and October 31st, or within five and a half hours if the sample is taken between November 1st and April 30th. The new test is comparatively simple to operate, and is expected to make easier the work of the local authorities responsible for the periodical examination of milk samples. The pamphlet also explains how samples should be collected and dealt with. Copies of it have been sent to all local authorities in England and Wales.

Public Health in Bermondsey

In a volume in which he recounts the history of the public health department of Bermondsey the medical officer of health of the borough depicts in an arresting manner the insanitary conditions prevailing there less than a hundred years ago. At the time when the Metropolis Local Management Act came into operation the borough indeed already enjoyed the services of a water company, but much of the area was criss-crossed with intensely polluted ditches, which were to many of the people their only source of water supply. In those days the first care of the medical officers of the vestries was to urge the need of general cleanliness, which, given the conditions, was in itself an important step. In the promotion of the social activities which bulk so largely in modern hygiene Bermondsey has shown an enterprise which is respected by all. Maternity and child welfare began with one health visitor in 1908. In a recent year practically every expectant mother in the borough received some measure of ante-natal supervision. Infant mortality has undergone a marked decline. Although the medical officer appears to view his overcrowding figures with some despondency, it is evident from what he says elsewhere that much has been achieved. Those who have visited the borough lately have observed with appreciation the spacious four-story

[1] *Bacteriological Tests for Graded Milk.* (Revised Memorandum 139/Foods.) H.M. Stationery Office. (3d.)

flats erected by the council. The municipal foot clinic has proved a boon to many workers, especially women, who in the course of their employment have to be on their feet all day. It is noteworthy that the thriving social services of Bermondsey are all at present being carried on in ordinary domestic buildings partially adapted to their new purpose. A valuable propaganda in hygiene has been conducted for a number of years by the Public Health Department. It is clear that the borough has travelled far since the middle years of last century.

CORRESPONDENCE

R.M.B.F. Christmas Gifts

SIR,—By your kind permission I appealed to your readers in October for contributions towards the Christmas Gift Fund of the Royal Medical Benevolent Fund. Only a few weeks remain before Christmas Day, and I am anxious to have sufficient funds to allow the gift of 30s. to be distributed to all our beneficiaries. May I ask those who intend to contribute to kindly send their cheques as soon as possible to the Honorary Treasurer, Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, W.1.

I hope the response to this reminder will be a very generous one. Great would be the disappointment in the hearts of those beneficiaries if, through lack of funds, we could not give them the 30s. gift which they have so greatly valued in other years.—I am, etc.,

THOS. BARLOW,
President.

November 11th.

Sanatoria for Rheumatism: A Plea

SIR,—It is difficult to exaggerate the importance of rheumatic disease as a cause of ill-health, inefficiency, and economic loss. It was estimated by Dr. Glover of the Ministry of Health that the annual expenditure under the national health insurance is about £5,000,000, with a further annual loss of about £12,000,000 in wages, and then there is, in addition, a corresponding loss on all those not included in the insurance scheme. Acute rheumatism is one of the chief causes of heart disease.

The number of cases of chronic rheumatism in the State of Massachusetts is larger than the sum total of cases of tuberculosis, cancer, heart disease, and diabetes, and this fact applies probably to all countries in the temperate zone. In Sweden, next to old age, the disease is the most serious cause of invalidity, and in Denmark more invalidity pensions were given for this disease than for tuberculosis.

Rheumatoid arthritis affects housewives far more than men. There are conditions, whether of indoor life, of diet, or of sex organs, which affect women deleteriously. As Dr. Fortescue Fox has pointed out, this disease is not only one of the most serious but one of the most prevalent of all diseases to which women of all classes are liable, and it affects women particularly in the years of greatest activity.

It is a reproach that, while tuberculosis and many epidemic and tropical diseases are being studied and greatly reduced, the rheumatic diseases still remain without effectual means of prevention or cure. The cost of maintaining institutions for treatment of tuberculosis is well over two and a half millions a year. In London alone half a million a year is spent on institutional treatment. There are 459 tuberculosis dispensaries in England and Wales, and the scheme for treatment of this disease applies to the whole population, insured and non-insured, and is carried out by county and county borough councils. In 1911 the deaths from tuberculosis numbered 53,120; now they are under 30,000. This disease is rapidly coming under control; one of the great functions of sanatorium and dispensary treatment is education in ways of health and of prevention of the spread of the disease.

The rheumatic diseases should be attacked in the same way as tuberculosis. In both there is a general constitutional as well as a local disturbance. Young patients more seriously affected with arthritis are anaemic, easily tired and chilled, and require rest to relieve pain and weakness and to allow the acute conditions of affected joints to subside. At sanatoria sun and air baths and the right diet can be given. There is the advantage of a change from home worries, the methods of physical medicine can be brought into play, and the patient can be saved from travelling to and fro for such treatments. Sanatorium treatment is already given with very good results in the case of children affected with acute rheumatism. The sanatorium treatment of the rheumatic diseases requires to be carried out by the rural and borough councils on the same lines as for tuberculosis: in Sweden, a nation of six millions, there are already about one thousand beds allocated. It is reckoned that £20,000,000 is being spent annually on bottles of medicine and out-of-work pay under the national insurance. How much better to spend a part of this immense sum in curing at sanatoria rheumatic diseases, which are a chief cause of invalidity.—We are, etc.,

LEONARD HILL.
PHILIP ELLMAN.
A. G. TIMBRELL FISHER.

St. John Clinic, Nov. 12th.

Bromide Intoxication

SIR,—The excellent article which appears in your issue of November 14th on the subject of bromide intoxication is of great importance to all doctors who treat cases of mental and nervous disease.

I venture to support the authors' conclusion that bromide intoxication is more widely spread than is generally recognized. Most general hospital pharmacopoeias contain mixtures with fifteen or more grains of bromide per dose, which may be prescribed thrice daily. In the light of this article on bromide intoxication the danger of repeating such a mixture over long periods becomes obvious, and must result in a high level of bromide in the blood, which in turn may produce mental symptoms. There is then the possibility that the symptoms will be accepted as an exacerbation of the mental complaint for which the patient sought treatment in the first place, with the result that the dose of bromide may be still further increased. There can be no doubt of the value of bromide in treatment. But it is clear from the work of Drs. Barbour, Pilkington, and Sargant that bromide therapy requires more accurate and precise indications in its employment. My own experience has taught me that quite small doses of bromide are as efficacious as the customary (almost traditional) large doses found in the standard mixtures of most general hospitals.

May one be permitted to suggest to the authors an investigation into the blood-bromide level of, say, one hundred medical out-patients attending a London general hospital.—I am, etc.,

G. W. B. JAMES, M.D.

London, W.1, Nov. 16th.

SIR,—I was particularly interested in the article on this subject by Barbour, Pilkington, and Sargant (*Journal* November 14th, p. 957). I entirely agree with their conclusions, but would like to comment upon one remark (p. 960): "Menopausal conditions . . . appear to be particularly helped by bromide." In a paper I published in 1927[1] I made the following observations.

1. No adequate control of patients showing moderate or severe degrees of psychological disturbance could be obtained without producing signs of bromism; this was particularly noticeable with regard to the incidence of acneiform skin eruptions, which were not relieved or avoided by the addition of liquor arsenicalis to the bromide mixture.

The increased tendency for cutaneous eruptions to occur as a result of the administration of bromides to women at the menopause may be accounted for by the particular sensitiveness and lowered power of resistance of the skin which, according to Kisch,[2] is a common climacteric phenomenon.

2. The prolonged administration of bromides at the menopause causes the mental depression which is in many instances a prominent feature of the patient's psychological picture to become increased in intensity.

This depressive effect may, in part, be accounted for by the fact that bromides tend to accumulate in the body. Cushny[3] states that after a single dose of 30 grains of bromide the urine may be found to contain traces of the drug for two months, only about 10 per cent. being eliminated in the first twenty-four hours. As I have shown elsewhere,[4] a definite connexion exists between the intensity of the vasomotor symptoms encountered at the menopause and the psychological condition of the patient.

I have for many years given up the use of bromides at the menopause, and have used medinal (sodium veronal) in doses varying between 1 and 2 grains, three times daily. Since 1924 I have only had five instances of a transitory, irritable, morbilliform eruption. In no instance did the rash last for more than two days after withdrawal of the medinal, and in all instances a return to a normal dosage was possible within seven days—that is, after the patient had become desensitized. In no instance has the rash recurred. No mental depressive effects have been noted in my series, even after many months of continuous veronal therapy.

Medinal is not cumulative in small doses, and some 50 to 90 per cent. can be recovered from the urine within twenty-four hours of taking a dose, the rest apparently undergoing oxidation in the tissues (Cushny[5]). The medinal habit can be avoided if this barbiturate be used as a sedative and not as a hypnotic. In my experience 1 grain of medinal provides the same sedative action as 10 to 20 grains of bromide.

In conclusion, therefore, I feel that the use of bromides at the menopause should be discontinued, and that some easily eliminated sedative, such as sodium veronal, is a much more satisfactory therapeutic agent when administered in menopausal cases.—I am, etc.,

London, S.W.7, Nov. 14th. JOHN H. HANNAN, M.D.

REFERENCES
[1] Hannan: *Practitioner*, October, 1927.
[2] Kisch: *The Sexual Life of Women*, p. 633.
[3] Cushny: *Pharmacology and Therapeutics*, p. 236.
[4] Hannan: *The Flushings of the Menopause*, p. 18.
[5] Cushny: *Pharmacology and Therapeutics*, p. 268.

SIR,—Drs. Barbour, Pilkington, and Sargant are to be congratulated on their most valuable contribution to therapeutics in the *Journal* of November 14th. I confess to being one of the many who have hitherto looked for a rash as the first indication of over-dosage with the bromides, as with the iodides. During the war I was given 10 grains of ammonium bromide t.i.d. as a part of treatment for an acute otitis media complicated by infection of the labyrinth. I took the bromide for six weeks, and the only unpleasant effect was a taste of bromine. In the French proprietary mixture syrup rami there is bromoform, and the bromoform excreted from the lungs can be smelt. Ammonium bromide in doses of 30 to 60 grains, taken two hours before going on board a Channel steamer, is a preventive of sea-sickness and is equally effective in the prevention of train-sickness. Yet your contributors have demonstrated that the bromides may be definitely harmful in a large group of cases for which a safe sedative is required. Since the toxic effect of the bromides is due to their replacing the sodium chloride in the blood, may I suggest to your contributors, as a speculation deserving of experimental proof or disproof, that these toxic effects might be eliminated if an equal amount of sodium chloride was given with every dose of the bromides. Both would surely be absorbed into the blood stream and the deficiency of sodium chloride made good.—I am, etc.,

London, W.8, Nov. 16th. HALLIDAY SUTHERLAND.

Diverticula of the Stomach

SIR,—The publication of Mr. R. T. Payne's article on diverticula of the stomach (*Journal*, November 14th, p. 968) has, belatedly, stimulated me to overcome the procrastination which has delayed the publication of two further cases until now. They occurred within a year of each other some ten years ago, and are of special interest in that they were both observed in the living subject through a special type of endoscope (passed into the stomach at the time of operation) which I was then using quite frequently.

The first case was that of a man in the early forties with a history suggestive of gastric ulceration. The barium meal examination showed a large "crater" about half-way along the lesser curve, and the diagnosis of ulcer was thought to be confirmed. As the symptoms did not yield to medical treatment, the physician (Dr. W. J. Fenton) transferred the case to my wards with a view to gastrectomy. At the operation I was unable, either visually or by palpation, to detect any abnormality along the lesser curve, which was moderately covered with fat, and so decided to use the endoscope. This revealed a diverticulum lined with mucosa and having a sphincteric orifice. When closed, the orifice, owing to the puckering of the surrounding mucosa, was reminiscent of the anus; when relaxed it was about three-quarters of an inch across. An illustration of these two phases is to be found on page 535 of *Surgical Anatomy and Physiology* (Lake and Marshall). The diverticulum was evidently so thin-walled that, even when its position was known, it was impossible to detect it through the fat of the lesser curve upon palpation from the outside. I did not at the time think that the condition was related to the patient's symptoms and, in consequence, the diverticulum was left. Further radiographic studies "after the event" showed that there were certain definite characters in the "crater" to enable it to be distinguished from an ulcer. The patient has now been lost sight of, but for a period following the operation he continued to complain of the same symptoms; I feel convinced upon reviewing the case that they were connected with the presence of the diverticulum, and that the correct course would have been its removal.

The second case was also that of a male with a corresponding symptomatology. The diverticulum in this instance was smaller (about half an inch across), on the lesser curve, but much closer to the pylorus. With the experience gained from the previous case a tentative diagnosis was made from the radiographic appearances, and again the orifice of the diverticulum was observed directly through the endoscope. It is unfortunate, both from the practical and from the pathological points of view, that I once more came to the conclusion that the diverticulum should not be removed.

In a fairly extensive experience of gastric surgery these are the only two examples that I have knowingly come across, and I therefore think that the condition must be a rare one. At the time I made a search of the literature on the subject, but found that the majority of the cases then described were either based upon a radiographic diagnosis without substantiation or were actually large ulcer craters producing extragastric cavities.

Since in both of my cases the diverticulum was precisely on the lesser curvature I take the view that they are congenital in origin and represent an abortive attempt to produce a liver or pancreatic " bud " into the ventral mesentery, in an ectopic position. It is well known that there are considerable variations in the positions and arrangement of the ordinary liver and pancreatic buds ; a greater deviation from the normal would explain those diverticula along the lesser curve. Possibly the ones described by Mr. Payne on the greater curve near the cardia may have a different origin.

While on the subject of gastric surgery may I make a brief reference to Mr. Walker's article on the surgical management of high gastric ulcers (November 14th, p. 967). After the appearance of Mr. Wells's article in 1933 I pointed out that, as a result of experiences previous to that date, I had advocated this method of treatment in 1928 (*Lancet*, August, 1928), and had shown that " complete relief of symptoms and definite radiographic evidence of cure of the ulcer " had been obtained. I still believe, however, that this procedure should be reserved for those cases where the inclusion of the ulcer in the gastrectomy would be technically difficult and hazardous. In all cases where the ulcer can be taken without undue risk it should be included in the parts removed.—I am, etc.,

London, W.1, Nov. 15th. NORMAN C. LAKE.

Substances Promoting Cell Growth

SIR,—Dr. H. E. Annett, writing under this heading in the *British Medical Journal* of November 7th, raises several questions of considerable importance in his discussion of Dr. Cramer's letter of October 17th. He says: " Is the action of ' carcinogens ' really a stimulation of *normal* cells which effects their transformation into malignant cells? " The difficulty here is that it is quite impossible to say what a normal cell is. Presumably it is one that is behaving normally.

The mutation theory assumes that the effect of the carcinogenic substances is to cause a mutation or change of some of the genes in the nucleus of the cell, resulting in increased rate of growth of that cell, and that as the change is a genetic one all the progeny of that cell will exhibit the same characteristic of increased growth rate. It does not follow that the cell in which this change occurs was a normal one. Morgan, experimenting with Drosophila, found that certain strains of this fly showed a greater liability to exhibit mutation than others. It would seem to follow that there may be some inherited, or acquired, character of the cell which renders its genes specially liable to mutate as the result of some extrinsic cause, such as a carcinogenic stimulus. In the case of the most potent of the carcinogenic agents, such as dibenzanthracene and *x* rays, it would seem that the result of their application, the production of malignancy, is almost inevitable if the correct dose is applied. So that presumably normal cells are changed without there being any inherent weakness of the cell. It seems probable, however, that the change to malignancy is more usually preceded by an inherent weakness of the cell.

As regards the other question, " Have transitional stages between normal cells and malignant cells ever been convincingly demonstrated? " the answer must be No ; and if the mutation theory is correct such changes can never be seen, since a gene mutation is necessarily invisible. The fact that a change has occurred is only demonstrable by observing the result in the behaviour of the progeny of that cell.

It is well known that different cancerous tumours show different degrees of differentiation of their cells. In some the cells are well differentiated, while in others the cells are very disorderly in outline and arrangement. The more malignant—that is to say, rapidly growing—the tumour the less differentiation do its cells show. It would appear that fully differentiated cells are incapable of division. There is no doubt that occasionally malignant tumour cells exhibit some degree of function, such as the secretion of milk, mucus, or insulin (in cancer of the pancreas), and the cells of such tumours must have differentiated, at any rate, partially.—I am, etc.,

London, W.1, Nov. 11th. J. P. LOCKHART-MUMMERY.

Streptococcal Cervical Glands

SIR,—Why does Mr. Denis Browne (*Journal*, November 7th, p. 946) consider the treatment of streptococcal glands in the neck by tonsillectomy " logical "?

First, where do the organisms come from? By droplet infection from some other human being. Will, therefore, the removal of the tonsils prevent reinfection? The answer is in the negative.

Secondly, what are the anatomical sites across which the organisms enter the lymphatic vessels that carry them to the lymph glands? They are: (1) any mass of submucous lymph tissue of the upper respiratory and alimentary tract ; (2) the intervening areas of mucous membrane between these masses. Does, then, the removal of one portion only of these give a reasonable chance of stopping reinfection of the glands? Again the answer is in the negative.

Thirdly, do we want to stop this reinfection of the lymph glands? It is the function of the cervical glands to battle with these organisms after they have passed the first line of defence of mucous membrane and its associated submucous lymph glands. If the cervical glands do not become enlarged these organisms may proceed further into the body, gain the blood stream, and produce more widespread damage. Do we want these glands to get well any quicker than by the processes of nature acting on the inflammation while it is physiological and before it is pathological? We may doubt it.

Fourthly, let us admit that owing to their size, their site, and the direction of the ciliary flow the tonsils bear the brunt in frequency and in symptoms of most streptococcal invasions. That is why the majority of such infections, when the organism is deficient of an erythrogenic toxin, are labelled tonsillitis. May not this be a reason not to remove the tonsils, but to conserve them so long as there is any functioning tissue left? It is reasonable to suppose so.

So far, then, as deductive reasoning is concerned, logic does not seem to support Mr. Denis Browne's statement.

Let us now test Mr. Denis Browne's statement by inductive logic. When are the cervical glands enlarged by a reaction which is undoubtedly due to a streptococcus without any other organism being present? I think we may say that this occurs first in cases of scarlet fever, and secondly in those cases of invasion of the upper respiratory tract which run a similar course, except that there is no evidence of an erythrogenic exotoxin having been present. We may describe these as being cases of scarlet fever without the rash. The former cases

are congregated in special hospitals, where they are kept until the acute invasive stage has passed and they have reached the period of reaction, which I suspect is that which Mr. Denis Browne describes as a subacute streptococcal infection of the cervical glands. Now do the superintendents and other physicians dealing with these cases at this stage demand tonsillectomy? The answer is in the negative. So far as I know there is no such centre of medical activity in which the treatment of these glands by tonsillectomy is employed. And yet they form the greatest sum of experience in this type of case.

So far as inductive logic is concerned Mr. Denis Browne's statement seems to fall to the ground.—I am, etc.,

London, W.1, Nov. 16th. T. B. LAYTON.

Treatment of Fractures

SIR,—With reference to Dr. Neil Douglas-Gordon's letter in the *Journal* of October 24th (p. 841) may I be permitted to make one or two observations.

It is unfortunate, both from the point of view of the patient and of the house-surgeon concerned, that in "unorganized" fracture service the "basic fault," as Dr. Douglas-Gordon asserts, lies in the fact that the original treatment of fractures is "relegated"—again quoting Dr. Douglas-Gordon's own glib phrase—to the house-surgeon or casualty officer. This statement, suggesting as it does that the average house-surgeon is a being quite incapable of properly dealing with any fracture, implies rather a slurring suggestion of either malpraxis or a combination of ignorance and carelessness, which amounts to the same thing. I cannot agree with Dr. Douglas-Gordon's attitude in the matter entirely. In any case, it is an obvious fact that in the majority of hospitals which boast some degree of "organization" of fracture treatment the house-surgeon or casualty officer is responsible particularly for those cases which can be dealt with as out-patients. Midst the host of duties which are the lot of the house-surgeon or casualty officer, this is one important aspect of his work which he is not likely to neglect.

Speaking from the viewpoint of one who has had some considerable recent experience, as both house-surgeon and casualty officer, in the treatment of fractures "à la Böhler," I maintain that the average house-surgeon is not satisfied, as Dr. Douglas-Gordon imagines, with, for example, a partially reduced Colles fracture. If reduction fails at the first attempt, and no matter how perfect the technique or how experienced the operator, it may be so—no man is infallible, least of all in medicine—then it must be performed again if necessary. It becomes relatively simple by reason of *x*-ray control, and films must be taken, or the fracture "screened," after each and any manipulation. Often it is only by *x*-ray that one can with perfect assurance deem one's efforts an accurate and complete reduction. Again, anatomically and clinically, reduction of the typical posterior rotation of the small distal radial fragment in a Colles fracture may appear perfect, and yet a quick *x*-ray may reveal still a slight yet functionally all-important degree of displacement. All this, I suggest, is as obvious, and as much a matter of a certain amount of skill and knowledge and a lot of common sense, to the humble house-surgeon as to the experienced orthopaedic surgeon. Apart, too, from all questions of experience and ability, one need not emphasize the importance of scientific treatment of fractures from a medico-legal aspect. The average house-surgeon is fully alive to this. Rather than letting his hospital, the honorary staff, and his patients "down" in respect of fractures the house-surgeon is not infrequently the basis of a good reputation and the mainstay of the good work of a particular clinic.

Perhaps Dr. Douglas-Gordon will note that I intend my comments to apply to both "organized" and "unorganized" fracture service, for to-day the modern and scientific treatment of fractures has become almost entirely a hospital problem beyond the scope of the average general practitioner lacking *x*-ray equipment, and as such it is inevitable that the house-surgeon must play an important part, whether one can apply the term "organized" or not. Happily the day of thoroughly haphazard and unscientific treatment of fractures is gone.

Regarding Dr. Douglas-Gordon's remarks in consequence of recent articles in the *Journal* by Mr. Harvey Gervis (September 26th, p. 640) and by Mr. A. F. Goode (July 4th, p. 11), one may or may not be an ardent disciple of Böhler. Many people accept and expound Böhler's principles in aiming at, primarily, perfect *functional* results, and yet, in practice, discard in part his technique for substituted "modifications of Böhler." Let us not then criticize Böhler technique when varying results accrue, when often it is by no means "à la Böhler." The idea is there, however, and undoubtedly the widespread and increasing interest in fracture treatment in this country is borne by a wave across the seas from Vienna. The translation of Böhler's textbook into English by the eminent Hey Groves has done more than anything to make "Böhlerism" so popular amongst medical men in this country.

Organization by fracture clinics along Böhler lines becomes largely a question of expense and of provision of an adequate staff in hospital whose sole duty is the immediate treatment of fractures. Many provincial hospitals can also boast beautiful plaster rooms, properly equipped with extension apparatus, etc., and yet inadequacy of staff is prohibitive of treatment along these lines. Thus, for instance, a case of Pott's fracture which might, given sufficient staff and proper equipment, be manipulated under "local" anaesthesia, fixed, and immobilized in a "walking plaster," and after *x*-ray control be sent home shortly afterwards, has often to be admitted as an in-patient, and undergo a varying period of stay in hospital. Probably complete "organization" will be cheaper in the long run. Until we reach this goal generally, we must perforce approach the ideal as nearly as possible. One must—even house-surgeons and casualty officers—do one's best under any set of circumstances, however trying they may be, and however handicapped one may feel.—I am, etc.,

A. W. VAUGHAN ELEY.

Winsley Sanatorium, Bath, Nov. 4th.

Treatment of Spondylolisthesis

SIR,—I am most grateful to Mr. Mercer (*Journal*, November 7th, p. 945) for the trouble he has taken to answer the questions raised in my letter that appeared in the issue of October 31st. In view of the great possibilities of his operation I shall look forward to the publication of the more detailed paper that he promises when the operation has been given further trial.

I agree whole-heartedly with Mr. Mercer's feeling that efforts should be made to produce textbooks that are neither dry nor uninteresting, and in this respect I think that he has achieved considerable success. Individualism, too, is permissible, but not at the expense of that judicial detachment that should be the hall-mark of the teacher.—I am, etc.,

Stanmore, Middlesex, Nov. 10th. H. J. SEDDON.

Blood Groups and Paternity

SIR,—With reference to Dr. W. M. Feldman's letter (*Journal*, October 31st, p. 895) recording his inability to procure anti-M and anti-N sera, we suggest that he could have obtained a supply if he had applied to some centre in a country more progressive in the use of these sera. Some months ago one of us (G. C. D.) required some extra anti-M and anti-N sera, and on one Thursday morning rang up the Dublin agent for Messrs. Behring. The agent telegraphed the Behring works at Marburg-am-Lahn and the sera were received in Dublin on Saturday at 9.30 a.m. The sera cost a few shillings per cubic centimetre, and they were found to be specific and of amply high titre.

Blood group examinations for medico-legal purposes have often been used in the Irish Free State since 1932, when, on January 25th, in the Dublin Circuit Court, a farmer successfully appealed against an affiliation order. He was Group I (AB), and the child was Group IV (O). In another case, in November, 1934, a man's alleged paternity was excluded by both the examination for the A and B factors and the M and N factors. This was almost his only defence in the case, but despite the fact that the judge summed up in his favour the jury disagreed by a majority of 8 for the man and 4 for the plaintiff. This case has not been further pursued. In a divorce suit the examination of the A and B factors alone showed that the child was not the child of the husband. The learned judge admitted the evidence, but in his judgement stated that he had not to deal with the parentage of the child, but nevertheless granted the divorce to the husband.

We are in complete agreement with Drs. Roche Lynch and Harley regarding the question of adequate controls, and think with them that it is most undesirable, in general, to part with the sera. The specificity and titre of the sera should be controlled each time the sera are used, and absorption of agglutinins should form part of the test. Good batches of sera are difficult to prepare, and such work might with advantage be concentrated in a central institute. It is not only in the preparation, but also in the use of such sera that very accurate technique and considerable practical experience are necessary. Especially when the pathologist does not prepare his own sera, he should, in the interests of justice, satisfy himself beyond doubt by controls, cross-checks, and absorption of agglutinins (using the blood from persons whose groups have already been accurately determined) of the identity and titre of the sera, and of the results in the particular case. Only by such methods can errors in the test and consequent disrepute be avoided.

It is unfortunate if, as we understand, certain English newspapers have given publicity to the misinformed and ill-considered utterances of barristers, but we have always found that Irish Free State judges have grasped the importance and value of these tests as a disproof of alleged paternity despite the occasional efforts of counsel to detract from them, and we have no doubt that judges in Great Britain will hold similar views.—We are, etc.,

GERALD C. DOCKERAY, M.D., F.R.C.P.I.
JOHN MCGRATH, M.Sc., M.B., B.L.,
Dublin, Nov. 9th. State Pathologist.

Agranulocytosis

SIR,—I was interested to read in the *Journal* of October 31st (p. 865) of Dr. Griffiths's case of fatal agranulocytic angina. It calls to mind a very similar one which I saw about twelve months ago—also, I regret to say, fatal. The patient, a woman of 45 to 50 years of age, was admitted to hospital, and I am sorry that I am unable to trace her case sheets, but I remember distinctly the main features, which were as follows:

The wife of a public-house keeper, the patient was taken ill about three weeks previous to admission with a severe sore throat. This, however, cleared up quickly, and in a few days she was up and about again apparently well, except for a feeling of lassitude and general weakness. I, personally, did not see her at this date. Three weeks later (from the onset of the sore throat) Mr. John Roberts was called to see her one evening, and recommended immediate admission to hospital. When I saw her next day the condition was the following. The patient was obviously very ill. There was extreme pallor, producing a yellow, waxen tinge; the lips were dry and sore in places; she was again complaining of discomfort in the mouth and throat. On examining them sloughing areas covered with a thin white membrane were found in the following places: gingivo-labial groove on the right upper jaw; upper pole of right tonsil, extending on to the soft palate and uvula; upper pole of left tonsil; on the right side of the epiglottis extending into the vallecula and on to the lingual tonsil. Quoting from memory, the temperature was, I think, 101° to 102°, and remained up until death. A blood count showed little or no decrease in the red cells, but there were no polymorphs. I regret I cannot remember the rest of the count. The lungs and heart, etc., were, I think, normal. The patient was put on to pentnucleotide at once and had one, if not two, blood transfusions, but continued to deteriorate, and died about ten days after admission. Repeated blood counts failed to show a single polymorph in response to treatment.

Frank (*Arch. of Otolaryngol.*, March, 1936) recommends for these cases daily injection of liver extract, 3 c.cm., as well as pentnucleotide and repeated blood transfusions. He also states that the pentnucleotide may be diluted in 100 c.cm. of normal saline and given by the continuous drip method. Reznikoff (*Laryngoscope*, January, 1934) recommends adenine sulphate, and I should be interested to know whether any trial of these methods has been made in this country.

From even a small experience in these cases it seems that a moral can be drawn—namely, that a blood count should be done (*a*) in all throat cases which are somewhat atypical and in which a throat swab has failed to show the usual organisms such as Klebs-Loeffler bacillus, Vincent's organisms, etc.; and (*b*) in cases that have recovered from a sore throat, but lassitude and debility have lasted longer than a few days, say a week, with no improvement. I am not aware that amidopyrine or any other drug was discovered as a cause in the case quoted above.

I am indebted to Mr. John Roberts for permission to quote this case.

—I am, etc.,

B. M. L. ABERCROMBY, M.B., B.S., D.L.O.
Royal Infirmary, Liverpool, Nov. 9th.

Treatment of Carcinoma of the Cervix

SIR,—There are several points arising from Mr. Victor Bonney's undignified letter in the *Journal* of November 14th (p. 1000) that call for comment.

Mr. Bonney suggests that I have made a misleading statement when I say that surgery has no place in the treatment of carcinoma of the cervix uteri to-day, except in Vienna. The truth is often hard to face, and Mr. Bonney knows better than anyone that to bring a point home to an audience it is sometimes necessary to make a statement that is to a certain extent incomplete, but this is by no means the same as making a misleading statement. Having had the privilege of watching Mr. Bonney and Dr. Antoine (of Vienna) perform Wertheim's hysterectomy for cancer of the cervix, I could hardly be unaware that the operation was still being done, but I state quite definitely that it is being done to-day by a small and rapidly dwindling minority. Admittedly there

is a handful of dichards, not only in London but also in France, Germany, the United States, and Australia, who still perform the operation, but only in Vienna is it being done on any large number of cases. And even if the average surgical results were as good as those obtained by Mr. Bonney and the Viennese workers there would be no justification for carrying out such a major procedure to-day when there is an alternative method of treatment which gives better results and without the high operative mortality.

What is the position to-day? Mr. Bonney and the Viennese school have published between them the results in some 2,500 cases operated on, with a five-year survival rate of approximately 40 per cent. The operative mortality is well summarized in Mr. Bonney's letter. These can be taken as the best surgical results, as they have only been bettered in quite small series of cases (for example, J. L. Faure: *Bull. de l'Acad. de Méd.*, 1932, cvii, 649). What are the comparable results in cases treated by radiation? The only relevant cases in this argument are the operable ones, and in these the figures from Paris, Stockholm, New York, Baltimore, Chicago, London, Erlangen, and Munich summated show some 1,200 cases treated, with a five-year survival of over 50 per cent. The operative mortality in these cases was less than 1 per cent., and they represent the results obtained by radiation while still in its infancy. A study of the results published by the Marie Curie Hospital emphasizes this point. Surgical results are static; radiation results are yearly improving. Is it any wonder, then, that gynaecologists are ceasing to perform Wertheim's hysterectomy? Hysterectomy will sometimes be indicated in special circumstances, as when a procidentia uteri is complicated by a carcinoma (I have operated upon one such case) and in handling an occasional complication like a pyometra; but that is all, and to the younger gynaecologists Wertheim's hysterectomy is already an operation of only academic interest, comparable to nephropexy and the straightening of kinks.

Mr. Bonney's last paragraph disappoints. Our more critical northern women would certainly not let anyone perform a complete Wertheim's hysterectomy with the unquestioning faith of his patients. They would even suspect cancer sometimes when the question of operation was mooted, and few would have the gullibility of Mr. Bonney's patients. There are many of us using radium for other than malignant conditions, particularly for many cases of menorrhagia, and there is an increasing knowledge of this among the public. It is already quite easy to use this loophole in the few cases that demand it. It is a poor argument for operation that the patient can be misled more easily and effectively than if radium is to be used, and it hardly justifies a procedure having such an appalling mortality in most hands. Nor is it worthy of Mr. Bonney.

One last word: the results obtained by Mr. Bonney and his peers represent many years of specialized experience. Some of the disrepute attached to radium treatment comes from those who, abandoning operation, think radium treatment requires little or no training. In such hands the results with radium are only too often pathetic. Radium can be an invaluable servant if used properly, but to use it properly requires considerable training. Surgeons look askance at those without surgical training who perform laparotomies, yet gynaecologists seem to regard it as quite in order for them to apply radium containers to the vaginal vault and the uterus according to a formula. Until gynaecologists tackle this problem in the right way there will continue to be a handful of men using surgery for preference in operable cases of cervical cancer.—I am, etc.,

Manchester, Nov. 14th. T. F. TODD.

Care of the Sea-sick

SIR,—In his very comprehensive and persuasive paper on the above subject (*Journal*, October 24th) Dr. John Hill discusses the action of belladonna and its value in cases of sea-sickness of the vagotonic type. He also refers to its use as a prophylactic, in which field it had a well-established reputation among the ship surgeons of a decade ago. The recent work on acetylcholine by Henderson and Wilson (*Quart. Journ. Exper. Physiol.*, 1936, xxvi, No. 1, p. 83) may throw some additional light on the action of belladonna. The work in question strongly suggests that the synapses of the central nervous system are activated by acetylcholine, and assuming this view to be correct it is perhaps not unreasonable to suppose that the beneficial effect of belladonna in sea-sickness is partly due to an inhibitory action by atropine at the synapses, resulting in a diminution in the number or intensity of the afferent impulses set up by the ship's motion.

It is possible that some immunity from sea-sickness may derive from an ability to produce in response to repeated and excessive stimuli a chemical substance capable of counteracting the effect of the liberation of acetylcholine at the synapses involved. Whether this could be regarded as merely the chemical counterpart of a stage in the establishment of a conditioned response is an interesting question.

As Dr. Hill mentions in his paper, acidosis is common among sea-sick patients, but I think no one nowadays should be misled into mistaking this for a cause.

In very rough weather it is probably a mistake to encourage sick persons to get up and find their sea-legs. I think many of the accidents at sea during storms could be prevented by persuading the sea-sick to remain in bed till conditions improve. The majority of sea-sick patients can usually be restored to a condition of comparative comfort within a few hours though unable to get up, and it is perhaps better to prolong this stage an extra day or more than to let them run the risk of broken limbs and severe colds.

The trick of relaxation mentioned by Dr. W. Thomson Brown (October 31st) has helped to turn the balance in favour of many a traveller on the verge of sea-sickness. Some years ago Mr. Bernard Shaw gave me a vivid description of how he had resorted to this measure once while crossing to France on board a destroyer during the war, having discovered the trick for himself. He illustrated his particular method by walking up and down the room with his body completely relaxed and allowing his knees to sag. On the crossing referred to he was accompanied by a party of authors and journalists, including the late Mr. H. W. Massingham, all of whom watched him curiously as he slithered up and down the deck in front of where they were huddled. On approaching Boulogne Mr. Shaw went over to his companions expecting to receive their congratulations on having stood up to a very rough sea.

Shaw (exultantly): "It worked! I'm all right! I'm not sea-sick!"

Massingham (miserably): "Yes, you are all right. You are not sea-sick, but, by heavens! you've made all the rest of us sea-sick!"

The method would thus appear to have its drawbacks.—I am, etc.,

Southampton, Nov. 14th. A. GARDNER, M.B.

SIR,—As one of those who are often called upon to treat the sea-sick, I was interested to see whether an article in the *Journal* of October 24th, labelled "The Care of the Sea-sick," had anything new or helpful to

tell us. Macaulay was once given a translation of Kant, and said: "I tried to read it, but found it utterly unintelligible, just as if it had been written in Sanskrit. . . . It seems to me that it ought to be possible to explain a true theory of metaphysics in words which I can understand." These words recurred to my mind after reading the above-mentioned article, Kant becoming Dr. John Hill, and "a true theory of sea-sickness" being substituted for "a true theory of metaphysics."

We may agree that sea-sickness usually subsides within a few days by a process of adaptation of the nervous system to the stimuli evoked by the motion of the ship, which is only rather a grandiose way of saying that we gradually become accustomed to the motion, or—in colloquial language—find our sea-legs. The first "fundamental requirement" for this adaptation, we are told, is "the simultaneous action of the conditioned stimulus and the unconditioned stimulus already established as the activator of the desired reflex." This is a hard saying, but on this occasion at least Dr. Hill kindly comes to our aid, and explains that it is merely a learned way of stating "the common-sense axiom that one cannot expect to get one's sea-legs by lying in bed"; and he goes on to say: "If the sufferer is able to go about, he should be encouraged to walk *with* his feet rather than merely *on* them. The consequent increase in the range and intensity of proprioceptive stimuli reinforces the conditioned stimulus" (!)

Here it is that I venture to join issue with Dr. Hill, no one of your various correspondents, rather surprisingly, having touched on this point so far. Putting aside the recondite difference between walking "*with* the feet" and "*on* the feet," and the resulting reinforcement of the conditioned stimulus by the increase of proprioceptive stimuli, which I must confess might be Sanskrit for all my understanding of it, I believe that the cardinal points in attempting to treat sea-sickness are, in order of importance: (1) free exposure to fresh air; (2) the recumbent position; (3) proper protection from cold in carrying out (1). Where climatic conditions permit, I always advise patients to have a mattress laid out on deck and to have their food brought to them, and see that they have an adequate covering of rugs or blankets if the air is cold. Where the passenger (ladies usually) will not face the publicity of the open deck, one should insist on the cabin port-holes being kept wide open if weather conditions allow. This is also the view of the author of *The Ship-surgeon's Handbook*, Dr. Vavasour Elder, who writes from an experience of long years as a ship's doctor. For the rest, one can only feel one's way, in the bad cases, with one diet or another, and with one or another of the numberless remedies that have been stated to be helpful by different observers.—I am, etc.,

Tunbridge Wells, Nov. 15th. E. WEATHERHEAD.

SIR,—One of the best remedies for the prevention of sea-sickness is opium pills. One should be taken before boarding the ship, and then one pill three times a day for two or three days. By doing so two of my sisters who were very susceptible to sea-sickness travelled to Australia without missing a meal on board ship. One of the sisters suffered greatly from chloroform sickness until I hit upon the remedy—namely, giving her an opium pill a few hours before the operation. Chloroform increases the secretion of bile, and opium appears to stop it more or less; both pull in opposite directions and equilibrium is restored. I believe sea-sickness is primarily due to disturbances in the semicircular canals of the ear, and any narcotic will tend to prevent it.—I am, etc.,

Dornoch, Nov. 9th. JOHN T. MACLACHLAN, M.D.

SIR,—I have noticed the recent correspondence in the *Journal* on sea-sickness. Prophylactic treatment would seem to be worth a trial, yet no mention has been made of the hammock, with the use of which the movements of the ship in rough weather are scarcely appreciable. A note on this might draw interesting replies from ship surgeons and naval men.—I am, etc.,

Agadir, Morocco, Nov. 4th. G. G. COOPER.

Sedimentometers

SIR,—With reference to the letter of Drs. J. W. Shackle and C. L'Estrange Orme, as published in the *Journal* of November 14th (p. 1001), I would like to point out that a misunderstanding is present concerning my opinion as to the effects of temperature on sedimenting columns of blood. So far from regarding warming of the tubes as objectionable, I consider it essential, and at a temperature at or near blood heat; in fact, with thick glass pipettes it was found necessary to pre-heat them, so that at no time were the columns of blood allowed to be cold.

These remarks apply to 0.1 c.cm. pipettes; my experience with standard Westergren pipettes is limited, but my observations led me to believe that it was necessary also with them.

Heating the column of blood above room temperature does increase the rate of fall—at 37° C. being approximately twice as fast for the intermediate readings during the first thirty minutes—but it also produces many more uniform results by reducing the incidence of coarse agglutination, which, when it occurs, renders the test of little value.

The Midhurst Report for the year ending June, 1934, records some observations on this matter.—I am, etc.,

London, W.2, Nov. 13th. G. W. GARDE.

Complete Repair of "Mallet Finger"

SIR,—In reply to Mr. B. L. McFarland's criticism (October 31st, p. 897) of my remarks on the prognosis of mallet finger, may I say that they were based on the opinion of surgeons with whom I discussed the matter.

It may perhaps be of interest to mention that no sooner had the original mallet finger recovered than a fairly trivial injury produced this condition in another finger; and though this was treated in the same manner as before the result is less satisfactory. In the second case, however, it was impossible to apply any form of splinting until about an hour after injury, whereas in the first it had been immediately applied. This would seem to emphasize the importance of immediate temporary splinting for a perfect functional result—perfect, that is to say, to such a degree as might be required by a professional musician.

I take it that it is the possession of fingers of more than average length that renders one liable to this sort of accident, the tendon being at increased mechanical disadvantage when a sudden force is applied to the fingertip.—I am, etc.,

University Clinic of the Charité, Berlin, Nov. 7th. BASIL MERRIMAN.

Ancient Texts of Indian Medicine

SIR,—Medical men attending the recent annual meeting of the British Medical Association at Oxford could not fail to be impressed by the treasures of old MSS and early editions of medical classics preserved in the Bodleian Library. The *Journal* (July 18th, p. 136) has done a

service to the profession abroad by drawing attention to some of these precious exhibits. No student of medicine can hear of the beauty and interest of this exhibition without a thrill of delight.

The Indian student, however, cannot help a mild regret at the complete absence of any reference to the great texts of Indian medicine which have been collected in only one or two places in the whole world, of which one is the Bodleian. Members of the Indian Medical Service and Indians visiting Oxford would have a unique opportunity there of coming into contact with a most interesting cultural aspect of medical history. Oxford played a very important part in the early annals of the East India Company. Sir Thomas Row, the first Ambassador of England to the Mogul Court, owed part of his success to his early schooling at Oxford. Many distinguished sons of Oxford, medical and non-medical, have contributed to the building of the Indian Empire. Sanskrit research has been, side by side with Greek and Latin, a favourite pursuit at Oxford. It is needless to repeat the long list of the Orientalists that blazed new trails from there. Even in the present century, Oxford made a unique contribution to medical history in general and to Indian medicine in particular when Dr. Hoernle edited the magnificent edition of the now famous Bower MSS, and later published his illuminating *Studies of Ancient Hindu Medicine*.

No place in the Empire is better equipped than Oxford for an exhibition of ancient and mediaeval texts of Indian medicine. One must make a pilgrimage to Oxford to peruse the early MSS of the oldest Indian medical classics —namely, Charaka and Shusruta. Mediaeval medical texts of Indian origin are also well represented there. Some of the earliest MSS of Bhavaprakasha, Sarangadhara Samhita, and Sata-Sloki are also there available for inspection. Treatises on chemistry like Rasarnava and Rasendrachintamani, composed between A.D. 1300 and 1500, and another treatise on chemistry attributed to Nagarjuna in an MS of A.D. 1415, form a particularly interesting group.

I trust that it is not entirely out of place to allow a reference in your *Journal* to these old MSS and rare early editions which are preserved at Oxford. It may serve to stimulate some interest in the collection and comparison of old texts, and also bring about a mutual and closer understanding between the two nations whose master minds in medicine, the heritage of all mankind, are represented in the great library at Oxford.—I am, etc.,

Vizagapatam, India, Oct. 1st. D. V. S. REDDY.

National Maternity Service

SIR,—In reply to my letter in the *Journal* of October 31st Sir Henry Brackenbury states that the B.M.A. scheme provides "medical supervision throughout by the doctor of her choice." On the face of it this purports to show that every patient has the benefit of a doctor's services throughout pregnancy and labour. Actually this is not so. The scheme provides for ante-natal examinations by a doctor in every case, but otherwise no doctor except "when, as a result of his ante-natal examination the practitioner has declared his personal attendance to be necessary, or when his attendance is requested by the midwife." This is the actual wording of the clause in the B.M.A. scheme. It means that, apart from abnormal cases and those where the doctor is booked by the patient, all others will be attended by a midwife only. I think Sir Henry Brackenbury has been guilty of a gentle prevarication in his effort to completely squash my argument. As I was discussing matters from the standpoint of drugs administered for the relief of labour, it follows, therefore, that in my opinion most patients would have inadequate relief afforded them.

The B.M.A. scheme was formulated in 1929. I think it is out of tune with the times, and suggest that the moment is ripe for a reconsideration of the whole question. In conclusion, I would like to thank Dr. John Elam for his supporting letter.—I am, etc.,

Leicester, Nov. 10th. C. L. SOMERVILLE.

Teaching of Obstetrics

SIR,—May I be allowed to add something to your correspondent's letter under the above heading in the *Journal* of September 12th (p. 562). At my own school I saw forceps applied a very few times, and was allowed to apply them myself on the dummy only, an utterly futile performance, as one has no chance of feeling for the cervix to avoid including it in the grip, neither is there any indication of the force of traction necessary in the living subject.

Like so many others, I had to practise the application of forceps for the first time in a country cottage, without even a nurse to help, truly a nerve-wracking experience to one who has any conscience. Unfortunately it is the rule rather than the exception under the present system of training in many of the best schools in the country. However, the gods have been on my side, for during my ten years of practice I have successfully applied forceps many times in vertex presentations, to the after-coming head of a breech presentation, and even to a persistent face presentation once, so I would encourage "M.B., B.Ch." not to be downcast. If he is as fortunate as I in the acquiring of the art his early patients need never know what they have escaped!

That such a state of affairs should exist at all in this enlightened age is far from creditable to the teaching authorities of the great universities. Surely no great upheaval of the curriculum is necessary to allow every student to apply forceps at least once in the living subject, and so gain that essential "feel" of the correct application, locking, and traction which makes all the difference between experience and inexperience.—I am, etc.,

J. S. L.

October 9th. M.B., Ch.B.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons on November 11th appointed a Select Committee to consider the medicine stamp duties and to make such recommendations for the alteration of those duties and otherwise as it thought fit, with a view to reforming the law. The committee appointed is: Mr. Acland, Mr. Baxter, Admiral Beamish, Mr. Benson, Sir Reginald Blair, Mr. Cary, Sir John Ganzoni, Mr. George Hall, Mr. Hardie, Sir John Haslam, Mr. Lewis Jones, Mr. Keeling, Mr. Lathan, Captain Ramsay, and Sir Arnold Wilson.

The motion on the condition of natives in East Africa, for which Sir Ernest Graham-Little had secured time on November 11th, was not moved, because Mr. Attlee obtained the adjournment of the House to initiate a discussion upon the Government's refusal to receive unemployed marchers.

On November 12th the House of Commons agreed to additional import duty orders, including one which alters the duty on imports of potassium salts. Dr. Burgin said the Board of Trade wished to vary the duty on potassium fertilizer salts because of a difficulty in distinguishing certain mineral potassium salts from processed salts. The new definition might render liable to duty some potassium nitrates which had hitherto been free of duty.

The House of Commons this week read the Public Order Bill a second time and considered the Expiring

Laws Continuance Bill. Mr. Chamberlain promised further legislation to aid the special areas. The House of Lords discussed defence.

The Parliamentary Medical Committee, at its first meeting of the session on November 17th, decided to meet on the first Monday of each month. The committee made arrangements for the complimentary dinner to Viscount Dawson on November 24th, and discussed its arrangements for watching Parliamentary developments in respect of physical fitness, physical training, and nutrition. It agreed that representative experts in physical training should be asked to address the committee, and that information bearing on the forthcoming Factories Bill should be asked from those concerned in factory inspection. Inquiries about milk will be left to other committees of Members. The Select Committee on the Medicine Stamp Duties met for the first time on November 17th and appointed Sir John Ganzoni its chairman. It agreed to sit twice weekly and to hear evidence.

Health and Physique of the Nation

Debate in the Lords

As reported briefly in our issue of November 14th (p. 1009), Lord Mount Temple in the House of Lords on November 10th initiated a discussion on the physical fitness of young people. We did more than most nations, he said, in cramming the brain, but paid no attention to the physique of young people, male or female, after leaving school. The State did little for the health of children during the school years so far as games or exercise in the open air were concerned. The provision of playing fields was ludicrously inadequate. As the Ministry of Labour was already able to compel attendance at evening classes for unemployed youths between 14 and 19, the same policy ought to be applied to remedying defects in their bodies. Moreover, any youth, whether employed or not, should be allowed to attend classes free of charge for courses of physical exercise. It was vital that the physical improvement of the people by the Government should be the continuation of the work done by the Board of Education and should not be in charge of any other Department.

Seeds of Deterioration

Viscount Dawson said he had visited not only Germany but also Sweden and Denmark, and found that these countries had studied these questions to greater advantage than the United Kingdom had done. A time had come when the nation must take stock of its ideas and keep pace with events. It was a small view to espouse nutrition and depreciate physical education. It was equally foolish to pretend that the human race could be independent of the laws of sound breeding, though the qualities sought in the human race were more complex and nobler than those sought when breeding animals. That did not alter the fact that if we, as a nation, neglected the law of breeding we should suffer. There were evidences that we were suffering now. In discussing fitness he wished it to be understood that the term "fit" comprehended the whole man in body, mind, and character. It would be wrong to say this nation was deteriorating, but the seeds of deterioration were in our midst. In the elementary schools, say of London, the children as a whole would be found to be well-nourished, well-kept, bright, of good colour, and brimful of vitality, and with better promise of good teeth. Rickets was disappearing. At the same time there was among these children a minority of weaklings. If, on the other hand, the group inspected was one of adolescents, such as boys in public schools, young men in factories, etc., the observer would at times be ill at ease. Such groups often showed defects in their bodies, which boded ill for their health when they grew older. The average boy and girl of to-day were taller, stouter, and heavier, but bulk of frame was not evidence of fitness, and the demands on the race were greater now than in days gone by. The nations agreed that physical developments must be in the forefront of the programme, but Parliament must distinguish between physical education and physical recreation. Physical education should take place in school hours to train the youth to get the best out of his stature and powers, and should be guided by the teacher. The best physical recreation which taught the boy leadership and teamwork and gave qualities and character should be given to every class of the community.

Problem Above Political Considerations

The defects which compelled re-examination of the problem went deeper than political considerations. Nature's methods were to have a high birth rate and a high death rate, both adult and infant, which brought about a substantial elimination of the weaklings of the race. Formerly weaklings of body and mind lived precariously, sank to the lowest economic level, mated with their kind, and had a high death rate. They were carried off in hundreds by tuberculosis and diseases of nutrition. To-day that group of weaklings was not eliminated to the same extent. The nation gave them maintenance and treatment, and they were even able to marry on their maintenance allowance, and so were contributing to a lamentable extent to the future of the race. The nation had removed Nature's method of selection. We were preventing the death of the unfit, and had not planned any adequate substitute. The only adequate substitute was to promote the fit on the one hand, and, on the other, to take care of the inherently unfit and prevent them from vitiating the race. While securing for the child of average ability every opportunity in the sphere of usefulness for which it was fit, the better and the best must be pushed forward.

Adequate Parentage

The smaller family did add to fitness, but we were also saving the unfit children and thereby doing an unavoidable damage to the community. It was a fact that the smaller families of to-day had a higher proportion of fit children, and the mothers of those children were, in Lord Dawson's judgement, better than those of any previous generation. At the same time it was true that we did not want a population too small. British leadership in the world might easily be imperilled. An appeal was needed—and it would be answered if reasoned arguments were applied—that there should be adequate parenthood. We had to realize that by the lower death rate there was a residue of inherently unfit that no environment, however favourable, was going to raise up to the level of good citizens. These were the tares in the field of life. In days gone by those inherently unfit were eliminated in larger numbers; they were cared for but little. To-day they were quite properly preserved, but they and the race should be protected. No effort should be made to raise them above their biological level. These defectives, whether physical, mental, or moral, if they happened to be carriers of disease to descendants or if they were undesirable parents, should be discouraged from reproduction and, where possible, prevented from undertaking parentage. Doctors were always exhorted to think in terms of prevention; why should they not use preventive measures against the birth of children who were a misery to themselves, a misery to their parents, and damaging to the race? The medical profession should be exempt from that ancient law of maiming and enabled to extend their powers of preventive treatment in cases they were asked to treat and where it was right to proceed.

A National System Needed

Lord Milne congratulated the Ministry of Health and the Ministry of Education on the physical training which was done in the State-aided schools. The instructors were schoolmasters, but the training was not detailed enough or long enough. In the preparatory and public schools games were carried possibly to perfection, but physical training was often badly neglected. Head masters did not allow physical training to be taken out of the time allotted to mental training and to games, and there was no medical supervision on the lines as in the State-aided schools. What the country lacked was a universal system, a British system of training to suit the British temperament and characteristics. Physical training, mental training, and the medical man should act together. Often physical training was carried out without reference to the medical man, and much damage was done. By a proper system they could not only build up the bodies of the young, but quicken the brain power and add to the moral strength of the young men of the country.

Food and Fitness

Lord Horder said he wished to make some remarks which would be supplemental to the ideal set out by Lord Dawson. Fitness for living, fitness for working, and, if that must be, fitness for fighting, could never be obtained by physical measures, whether educational or recreative. More basic things were imperative—food, shelter, air, and leisure. He therefore urged the Government not to cease from any efforts in those directions, but rather to intensify and expedite them. Why did the Minister of Health not advertise more fully what the nation had already done in those directions? Much remained to be done, and there was need for more co-operation between Government Departments. He had spoken of food being fundamental to fitness. He preferred the word food to the word nutrition. As a doctor he doubted whether Nature really intended us to be as selective in our diet as some people suggested. "Look after the accessibility of food," he said, "and nutrition would look after itself." He desired more co-operation in that respect between the Ministers of Health and Agriculture, the Board of Trade, and the Ministry of Transport. He welcomed the promised Factories Act as a contribution towards better living for the younger workers. If the Government speeded up the social services upon which depended the health and happiness of the people, and if the money was wisely spent on enduring rather than on temporary benefits, the cost of this revolution would be small by comparison with the cost of revolutions in other countries. As for physical training, he thought that methods and means would emerge naturally, given health and contentment in the nation. The Board of Education had sent delegates to Germany to study methods of physical exercise, but since when had Britons depended on other nations to teach them physical exercises? Let the Government stimulate and subsidize existing institutions that centralized physical training and physical recreation, chief among them the Central Council of Recreative Physical Training. He hoped the nation would not be regimented towards this work. Let the Government have faith that if the people were given security at home and security of sustenance their sturdy common sense would do the rest. A democracy which was asked to be physically fit advanced on its stomach.

The Earl of Listowel quoted the report of Sir John Orr on diet and the incomes available in the family budget of the country, and suggested that the physical training contemplated would not beneficially affect the depressed areas of South Wales and North-West and North-East England. He contended that long hours of work for persons between the ages of 14 and 18 were an important contributory cause to the physical debility of many working-class families. He pleaded for young persons who would not be covered by the Factories Bill, although they worked even longer hours. Lord Amulree said the voluntary societies could get hold of young people, but could not provide the playing fields which they needed. He was impressed with the need of preserving and extending all the voluntary agencies. Similar agencies had been fitted into the national health insurance system, and an effort should be made to put them into the system which was now contemplated.

Government Reply

Earl De La Warr, replying for the Government, said any policy which the Government brought forward must be comprehensive. At a later stage they would have to consider the fundamental points made by Lord Dawson, but he would be the first to admit that they were a long way from action on those points, because much more knowledge was required. None the less they were fundamental questions affecting the future of the race, and would have to be considered by any Government. Making certain exceptions with regard to special areas, the health statistics of the country gave a basis for confidence in the future. It was a little too early to tell the House definitely what was the policy in the Government's new health drive. It was not its view that there should be resort in some measure to compulsion. The Government intended to mobilize voluntary effort plus the local authorities, and to help and encourage them in giving facilities for greater health. Legislation might be necessary for improvements in machinery, and financial aid would have to be considered. If the right food was available and the right knowledge was available immense strides could be made in nutrition. Maternity and infant welfare work had to be developed. Nursery schools and nursery classes should be increased. Extension of physical training in schools had to be considered, and local authorities had been circularized on this. The efforts of the National Council of Social Service, the Playing Fields Association, the Central Council of Recreative Training, etc., had to be mobilized and assisted. The material provided by such inquiries as those of the Nutrition Committee of the Ministry of Health, the Marketing Supply Committee, and the Milk Reorganization Commission would need thinking out before it could be welded into a real policy, but he could tell the House that the Government recognized that any effective and comprehensive policy would have to deal with nutrition further than the Government had already done in the milk-for-schools scheme. Every suggestion made during the debate would be carefully considered by the Government.

Lord Mount Temple thanked Lord De La Warr for his speech and withdrew the motion.

Workmen's Compensation Bill Rejected

Mr. Mainwaring moved, on November 13th, the second reading of the Workmen's Compensation Bill. He said the objects of the Bill were to broaden the definition of dependants, to provide adequate compensation, to remove the administration of compensation outside the procedure of the courts, and to create an independent compensation of accident fund. There was widespread discontent with the existing judicial system and the degree to which the courts depended upon medical opinion—he would not call it medical evidence. In his experience and that of many of his colleagues medical science was prostituted in the courts because medical men in compensation cases took precisely the same attitude that legal men did. An employer or a workman could get any medical expert to say anything wanted in his favour. When men were briefed and in that manner merely went to court to express their medical opinion justice was liable to be left outside.

Mr. J. J. Davidson seconded the Bill. He said that in his constituency many men with hands twisted with rheumatism resulting from shipbuilding work under hard conditions had been completely lost in regard to claims for compensation.

Mr. Erskine-Hill moved the rejection of the Bill.

Mr. Rowson said the Bill was criticized because under it litigants would not be allowed to take a case further. Was that not the case under the present law when there was an agreed reference to a medical referee? Trade unions had tried to upset the decision of the medical referee, but knew the cost and the result. There was machinery in the Bill for improving that position. The medical referee might be competent or incompetent, prejudiced or fair, but under the existing law there was no right of appeal against his decision. Clause 72 of the Bill dealt with industrial diseases, a matter in which the present law especially needed amendment. Paragraph (*b*) of Section 43 (1) (iii) of the present Act was particularly hard on men suffering from miners' nystagmus, who, after varying periods of full compensation followed by partial compensation, were sent to the medical referee and certified to be recovered from the effects of that industrial disease. When the medical referee certified such men to be totally recovered they were deprived of their right to get employment in the industry again.

Medical Referees

Mr. Cassells asked if the Government was satisfied with the system of medical referees as it existed. The medical referee was expected to be completely unbiased, but the system was harsh so far as workmen were concerned. He would not saddle the complete responsibility on the medical referee. He believed he was asked on many occasions to decide questions which should devolve upon an ordinary judge. In Scotland they had many instances of medical referees not only sitting as such, but acting as medical advisers to insurance companies on behalf of employers. That was unfair to the referees, as to the workmen and the employer. Service on the workmen's compensation board, which was proposed by the Bill, should be a whole-time job. It should be a condition precedent to the appointment of

a medical referee that he acted neither for workmen nor for employers in any circumstances. At present medical referees themselves thought that the situation was intolerable.

A Special Scheme for Nystagmus

Mr. Geoffrey Lloyd, replying to the debate, agreed that the question must be considered from a humanitarian point of view. There were 16,000,000 people covered by the Workmen's Compensation Acts and £9,000,000 was paid yearly in compensation, but there was room for improvement. He had no personal experience of nystagmus, but from what he heard from medical inspectors and Home Office and other doctors this was a terrible disease. He had listened with a certain sympathy to the criticisms of doctors, but the critics had gone a good deal too far. Medical ideas concerning nystagmus had changed a good deal during the last generation. Doctors in a given situation did their best, and Acts of Parliament must be founded on the accepted medical ideas of a particular time. Doctors once considered that nystagmus was specifically an eye disease, and that oscillation of the eyeballs was the disease itself. The more modern view was that although one aspect of the disease might take the physical form of oscillation of the eyes there was associated with it, as perhaps the most important part of the disease, a psychoneurotic illness which afflicted the whole personality. That view was now accepted to a very considerable extent and made compensation and cure extremely difficult. He thought it required a special scheme. The problem was under the thorough examination of the committee presided over by Judge Stewart. Mr. Lloyd said he was familiar with the question of medical referees and the view thereon of Mr. Cassells. It must be remembered that the country needed referees who were on the spot and of a high professional standard, but that in many districts there was not an unlimited supply of medical men, so they had to be used for more than one purpose. He understood the feeling that some people had about one man being in the position of having to take an absolute decision. There might be a case for considering a right of appeal in such cases. That matter was being considered at the moment by the Stewart Committee.

On a division the Bill was rejected by 115 to 109.

Tuberculosis Invalidity Among Naval Officers

On November 11th Lord Stanley told Sir William Davison that twenty-four out of twenty-six Naval officers invalided for pulmonary tuberculosis during the last three years had their disability accepted as attributable to their service. Officers whose disability was accepted as attributable received retired pay with disability addition, and also, as there were no Service facilities for sanatorium treatment, they received grants for sanatorium treatment outside. In some of these cases the disease would have developed equally in civil life, but the Naval regulations were drawn to avoid inflicting hardship in individual cases. The few officers whose pulmonary tuberculosis could not be accepted as attributable to Naval service received Service retired pay or gratuity according to their rank and length of service. It would not be possible to justify differentiation between these officers and those invalided for other non-attributable causes.

Medical Services in East Africa

On November 9th Sir Ernest Graham-Little asked the Secretary of State for the Colonies if he was aware that the medical profession in Nairobi had petitioned the Governor of Kenya Colony against the removal of Dr. F. W. Vint from his present service in the medical research laboratory, which was specially praised in the Pim report; whether, as the removal of Dr. Vint would cripple the activities of the research laboratory and destroy the inquiry into the causes of native backwardness, he would reconsider the possibility of retaining Dr. Vint where his co-operation was essential.

Mr. Ormsby-Gore replied that a memorial had been received by the Governor, who had consulted him regarding it by telegram, and had sent him a copy by mail. Dr. Vint applied last July for a transfer from Kenya, and he (Mr. Ormsby-Gore) was proposing to select him for an appointment in Mauritius, which would have meant promotion to him. On receipt, however, of the Governor's telegram regarding the memorial he caused the Medical Research Council to be approached, in accordance with a suggestion of the Governor's, with a view to securing a grant which could be used to augment Dr. Vint's salary in Kenya, but the Medical Research Council did not feel justified in using its funds for such a purpose. He had consequently suggested to the Governor consideration of the question of increasing Dr. Vint's emoluments, so as to enable his services to be retained in Kenya without loss to himself if that were possible. But it would not be fair to retain him in his present position in Kenya to his own detriment.

Nystagmus and Silicosis

Sir John Simon, answering Mr. Tom Williams on November 12th, said the Departmental Committee on Miners' Nystagmus had almost finished taking evidence and had begun consideration of its report. It was not possible to say at present when the report would be completed. The inquiry also covered general medical procedure and arrangements under the Acts and the working of existing provisions and practice with regard to lump sum settlements. Mr. J. Griffiths asked whether the Home Secretary had received a report from the committee of experts who were investigating silicosis and anthracosis in the South Wales coalfield. Mr. Geoffrey Lloyd said this committee had been appointed by the Medical Research Council. It had made suggestions to the Council for further research, and these were at present under consideration by the Council. In the present state of medical knowledge it was impossible to say whether mine workers with pulmonary disease other than silicosis suffered from any illness which could be distinguished as occupational and be made the subject of a right to compensation. Mr. Griffiths asserted that an increasing number of men failed to continue their work because of lung trouble, which their own medical advisers said was due to their occupation, but for which they could not get compensation. Mr. Lloyd said that Mr. Griffiths was prejudging the result of the inquiry.

Air Raid Defence

Mr. Mathers asked what action had been taken with university authorities, particularly with those of Edinburgh, in regard to instruction in poison gas defence, whether this had been included in the curriculum as a compulsory subject in the public health course, and what authority the Home Secretary had for such action. Mr. Geoffrey Lloyd said the Home Secretary had appointed medical instructors in anti-gas precautions who, among their duties, would instruct medical students in accordance with arrangements made with the authorities of universities and medical schools. Whether this subject should be taught on a compulsory or a voluntary basis was entirely for the authorities responsible for medical education. Sir Alfred Knox asked whether satisfactory arrangements had been made for large-scale manufacture of gas masks. Mr. Lloyd said substantial stocks of components had been produced and large-scale assembly was expected by next month. The Home Office anticipated the production of the factory shortly to be at the rate of two million masks per month. The factory was a Government one, and the masks would be issued free to the general population in emergency. The issue by the Air Raid Precautions Department of a handbook free to the public was under consideration.

Replying to Sir Alfred Knox on the same day Sir Victor Warrender said anti-gas respirators were in process of issue to Territorial Army units, and supplies on a full scale would be made as stocks became available.

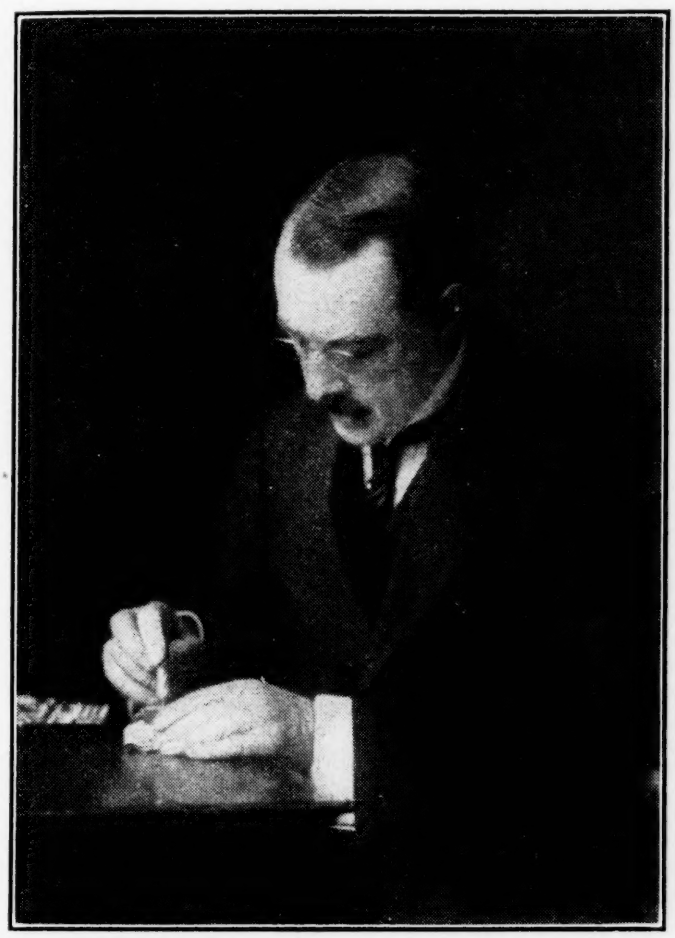
Mr. Geoffrey Lloyd told Mr. Arthur Henderson on November 12th that construction of shelters for the public which would be proof against direct hits by high-explosive bombs was impracticable. It was proposed that in the event of air raids members of the public should so far as possible remain indoors in a part of their home or place of work which had been adapted as a shelter and which was gas-proof and splinter-proof.

Obituary

R. H. ELLIOT, M.D., F.R.C.S.

Lieutenant-Colonel, Indian Medical Service (ret.)

Lieut.-Colonel Robert Henry Elliot, who died at Barnet on November 9th, was born on August 23rd, 1864, the son of Lieut.-Colonel J. McD. Elliot, the 4th King's Own Regiment, and studied medicine at St. Bartholomew's Hospital. He took the M.R.C.S. and L.R.C.P. in 1889, and graduated at London University as M.B. (honours) 1890, B.S. (honours) 1891, and M.D. in 1905. He also took the F.R.C.S. in 1892, the D.P.H.Cambridge in 1892, and received the Sc.D.Edinburgh in 1904. While at Bart's he gained the Preliminary Science Exhibition in 1884, and the Bentley Surgical Prize in 1888. Entering the I.M.S. as surgeon lieutenant on January 20th, 1892, he became lieutenant-colonel after twenty years' service, and retired on May 15th, 1914. At Netley he won the Montefiore medal and prize in military surgery and the Maclean prize in clinical medicine. On joining the I.M.S. he spent his first two years on sanitary duty, during which he served in an expedition in the Chin Hills, on the north-east frontier of India, in 1892-3, receiving the frontier medal with a clasp. In February, 1894, he got civil employment in Madras, and spent ten years in various posts, among them that of secretary to the Surgeon-General of Madras, and an acting appointment as superintendent of the Ophthalmic Hospital at Madras. In March, 1904, he was confirmed in that post, along with the professorship of ophthalmology in the Madras Medical College, and held both till his retirement, making a name for himself as the leading ophthalmic surgeon in India. After his retirement he was examiner of surgical instruments at the Indian store depot from August, 1919, to 1925. In 1919 he was appointed lecturer on ophthalmology at the London School of Hygiene and Tropical Medicine. In 1916-17 he filled a Hunterian professorship at the Royal College of Surgeons. He received the honorary Fellowship and gold medal of the American Academy of Ophthalmology, and honorary membership of societies in his specialty in Egypt, Detroit, and Chicago.



Apart from his professional work Elliot had two special interests; one was the study of snakes, to which he had devoted much time and many experiments during his Indian career. The other was the investigation of so-called magic. He had been chairman of the Occult Committee of the Magic Circle since 1919. He was a first-rate amateur conjurer, and had spent much time in studying Indian conjuring tricks and so-called magic. He was, with reason, especially confident that no man ever saw or ever performed the famous Indian rope trick.

He was the author of *Notes on Cataract Extraction*, 1910; *Sclero-Corneal Trephining in the Operative Treatment of Glaucoma*, 1913; *Glaucoma: A Handbook for Practitioners*, 1917; *The Indian Operation of Couching for Cataract*, 1917; *Tropical Ophthalmology*, 1920; *The Care of Eye Cases*, 1921; and *The Myth of the Mystic East*, 1934. During the last few years he had contributed some very interesting articles to *Blackwood's Magazine* on student days in the 'eighties, on snakes and snake poisons, and on magic. Elliot married Eva, daughter of the late Surgeon-General Hutchinson, I.M.S. She died in 1925. He leaves three sons.

Dr. Alfred Cox writes:

It is with sincere sorrow that I write this testimony to an old B.M.A. friend; but it is a pious duty to see, so far as I am able, that due recognition is paid to his brilliant services to the B.M.A., and, through it, to the Service of which he was a proud and distinguished member. These things are so easily buried in committee files.

Colonel Elliot was a member of the Association, with a short break, from 1891 to the time of his death. He attended the Annual Representative Meeting in 1911 as the representative of the South India constituency. He was vice-president of the Naval and Military Section at the Annual Meeting, 1920, and of the Section of Ophthalmology in 1921. From 1912 to 1922 he was a member of the Science Committee, and was a member of the Council from 1917 to 1922. During that time he served on several committees and subcommittees, all with a Service interest. But it was as chairman of the Naval and Military Committee from 1917 to 1922 that he made his mark as the most energetic, combative, and successful fighter for his old Service that I have ever known.

In the few years before the war the I.M.S. got into a bad way—so bad that in 1913 the Secretary of State for India wrote to the Association asking for its assistance in recruiting, as the entries had sunk to a very low ebb and the quality of the candidates had greatly deteriorated. The Association had been considering this matter for some time, and Dawson Williams, then Editor of the *Journal*, who always took a keen interest in Service affairs, had prepared a series of articles in which the situation was critically examined. He placed these articles at the disposal of the Council, which adopted them as the basis of the evidence it was asked to give

to the Royal Commission on the Public Services. And the Council, with the approval of the Naval and Military Committee, invited Elliot to act as its witness. Elliot, though not then on the committee, was known to it as the best-informed recently retired I.M.S. man. So well did he do his work that he was inevitably chosen to take up the attack when the matter was reopened in 1917. He was put on the Naval and Military Committee, which at once appointed him chairman, and from that time he led the fight, which was a long, and at times an embittered, struggle. In 1918 the Secretary of State received a deputation from the Association, and right well do I remember the occasion. With exquisite courtesy, but with a knowledge of the facts which made him invincible, Elliot handled the Secretary in a memorable duel. Mr. Montague, though friendly, had strong views of his own, and so had his advisers, and there was some very plain speaking, out of which Elliot emerged with great credit. He succeeded in convincing the Minister that unless his policy was changed the days of the I.M.S.—long renowned as the finest Service of its kind in the world—were numbered.

In due course Mr. Montague made many concessions, including a 33⅓ per cent. increase in grade pay, and asked that the Association should now use all its influence to encourage recruitment. There was a disposition on the part of some to take what was offered, but Elliot was not satisfied, and he was backed by strong representations from members and ex-members of the Service. The campaign dragged on, Elliot as determined as ever, but at the Annual Meeting at Cambridge in 1920 the Council was able to announce that practically everything they had demanded had been granted, including a 50 per cent. rise in pay. To make the victory more complete Sir Havelock Charles, then Medical Adviser to the India Office, attended the Representative Meeting and personally "thanked the B.M.A. for what it had done for all the Medical Services, and explained how conditions of pay, service, and pensions of the I.M.S. had been greatly improved, mainly owing to the action taken by, and the support of, the B.M.A." (I quote from the A.R.M. Minute.) It was a great achievement for the Association and a personal triumph for Elliot.

When I left the Association in 1932 Elliot asked me to become secretary of the British Health Resorts Association, a body largely medical, which he had founded in 1931. He was an intensely patriotic citizen, and he firmly believed that an important industry of this country essential in its health economy could be materially helped by an association based largely on medical guidance and influence. During the last five years he has been its Chairman of Executive, and he exhibited in that position, in spite of obviously failing health, all the qualities which made him a natural leader and fighter. His energy was phenomenal, and his enthusiasm unbounded. He could get through business as quickly and as well as any chairman I have known. He was exacting, for he had a keen eye for detail and strong views as regards the proper use of the English language; but no man could be more generous in his praise of good work in others. For the last three years he has been working under the imminence of the sudden death which came to him. He died, as he wished, in full harness, for he saw a patient only an hour or two before his death.

Lieut.-Colonel HENRY KIRKPATRICK, I.M.S. (ret.), writes:

The passing of Robert Henry Elliot creates a void in the ophthalmological world and occasions deep regret in the minds of his friends and patients. Always an arduous worker, he entered the Indian Medical Service after a brilliant career as a student at St. Bartholomew's. When passing out of Netley he obtained the highest honours available. After the usual military service on the North-West Frontier and Burma he was transferred to civil employment in Madras, and in his early days there held various important posts. After a period, during which he was seconded to work with Sir Thomas Fraser in Edinburgh on the action of snake venom, he visited on deputation the various eye clinics in Europe, and then obtained the appointment of superintendent of the Government Ophthalmic Hospital, Madras. His experience specially fitted him to introduce the latest methods of examination and treatment, and to raise the Madras Hospital to a leading place in the study and treatment of eye diseases. The reforms he advocated were naturally expensive, and brought him into opposition with the financial authorities of the Government, and his plain speaking at that time may account for the lack of that recognition of his services by the Government which might have been expected. During the following years he proved himself an expert at organization. His experience in Madras led him to study the grave injury inflicted on the public by the cataract coucher and other unqualified practitioners; he also devoted himself to the perfection of his methods of correcting errors of refraction, in which he was extraordinarily proficient. The work for which he will always be remembered is connected with the treatment of chronic non-congestive glaucoma. Recognizing the value of Lagrange's work on this subject, he set himself to devise a safer method of securing a filtering cicatrix, and evolved the idea of removing sub-conjunctivally with a trephine a disk of the sclero-corneal tissue.

Ill-health due to the tropical climate led him to leave Madras in 1912, and he then started consulting practice in London, where he soon acquired a large clientele. Knowing from his own experience the value of his technique in the treatment of glaucoma, he was somewhat disappointed by its rather tardy acceptance in England, but was, however, consoled by its ample recognition in America and elsewhere. His old Service is deeply indebted to him for the manner in which, after settling in London, he pressed its interests through the British Medical Association, of whose Council he was a very active member. By unremitting efforts he was able to secure enhanced pensions and general amelioration of terms of service. Despite the calls of his large practice, Elliot was a prolific writer, gifted with a charming and remarkably clear style. His works on glaucoma and tropical ophthalmology are classics. His talented wife gave him inestimable help in the preparation of his books. Her death was a shock from which he never really recovered. His lectures at the London School of Hygiene and Tropical Medicine were extraordinarily clear and interesting to the students.

Elliot had an extremely versatile mind, and his interests were spread over many subjects. A leading characteristic was intolerance of mysticism and any form of deception. He was devoted to the interests of his patients, and always sympathetic to their points of view. Those who knew him well were lost in admiration of the courage with which he carried on his work during the past years despite much suffering. He successfully performed a critical operation less than a week before he died, and saw a patient in consultation on the day of his death.

At the memorial service on Friday, November 13th, in Christ Church, Barnet, Dr. Alfred Cox represented the British Medical Association.

An obituary notice of Dr. D. A. McCombie appeared in the *Journal* of November 7th. We have received the following tribute from his colleagues on the staff of the London Homoeopathic Hospital, where he had held the post of pathologist since 1926: Dr. McCombie was the clinical pathologist *in excelsis*, although he held to the strict rule that no clinical history should be made known to the pathologist till *after* his examination and the report had been made. It was then that his wide clinical knowledge combined with his pathological findings proved so invaluable to the clinician in the elucidation of many a problem. No less helpful and consoling were his reflections on post-mortem findings, particularly in those cases in which a fatal ending was unexpected—for example, uraemia in which kidney function seemed normal. Here the acute humiliation of the clinician was tempered by the kindly sympathy and commiseration of the equally humiliated technician. Dr. McCombie was of a retiring disposition, perhaps too unobtrusive, but if a single phrase could describe him it is that he was "wise in experience." He will be sorely missed by his hospital colleagues, both medical and surgical.

The death is announced of Professor L. M. F. Hendrickx of Belgium. He was born on September 20th, 1859, and he distinguished himself as a veterinary surgeon, bcoming a corresponding member of the Veterinary Section of the French Academy of Medicine. He was a member of the Royal Academy of Medicine of Belgium, and in 1932 he was its president. He published altogether some eighty-eight original works, and was peerless as an operator. The death is also announced of Professor E. Paschen of the Medical Faculty of Hamburg on October 22nd, at the age of 76.

Dr. Isabella Mears, who died at Whitehouse, Inveresk, Midlothian, on November 11th, was one of the early pioneer medical women. She was born on December 20th, 1853, the daughter of James Bartholomew, farmer, West Lothian. After training as a teacher she desired to undertake mission work abroad. Having this end in view she was advised by Dr. Colin Valentine to obtain such medical education as was at that time available to women. With her father's whole-hearted approval she went to London in 1875 and entered the newly formed School of Medicine for Women, which had been opened by Dr. Sophia Jex-Blake six months previously. The number of students was small, and she had to fit into the curriculum of classes already in existence as best she could. Opportunities for clinical work there were almost none. A few beds in Dr. Garrett Anderson's hospital in Marylebone Road were available, and she seized the opportunity also of dispensary work in Seven Dials. Later, however, the Royal Free Hospital was opened to women—a great boon. Her midwifery experience was obtained in Dublin, where she had to take out her course along with the midwives. Among the lecturers at the School was the late Professor Sir Edward Sharpey-Schafer, who taught physiology, and whom she had the opportunity of meeting two weeks before his death and of exchanging reminiscences. Another lecturer was Dr. William Pope Mears of London Hospital, who taught anatomy. In 1879 she married Dr. Mears. At that time no British qualification was open to women. Mrs. Mears went with her husband to Newcastle, where he had been appointed to the Durham School of Medicine as anatomist. In 1881 she obtained the qualification L.K.Q.C.P.I., now L.R.C.P.I., the Royal College of Physicians of Ireland having opened its qualifying examinations to women. Her name was that of the twenty-fifth woman on the *Medical Register*. She engaged in general practice in Tynemouth for nine years, when she and her husband decided to carry out their early intention of mission work abroad. They were in Foochow, China, under the Church Missionary Society from 1890 to 1893, when they had to return on account of Dr. W. P. Mears's ill-health. In 1895 she and her husband settled in Edinburgh for the education of their children. As has been noted lately in a letter to the *British Medical Journal* (October 31st), in 1899 they opened at Woodburn, Edinburgh, one of the earliest sanatoria in Britain for the treatment of pulmonary tuberculosis after visiting Dr. Walther at Nordrach. Dr. W. P. Mears died in 1901, and his wife continued her work at Woodburn till 1922, when she retired. In addition to her medical work she was deeply interested in Chinese religion and philosophy. She translated the *Tao Teh King*, which was published in 1916, and after she retired she studied and made a tentative translation of one of the most difficult and ancient of the Chinese classics, the *Yih King*, embodied in her book *Creative Energy* in 1931. She is survived by two sons and two daughters, of whom two are in the medical profession.

Medico-Legal

A BLACKMAILER PUNISHED

On November 10th the Recorder of London sentenced to imprisonment for twenty-two months a salesman named George Hamilton James Snowball for the crime of blackmailing a doctor, whose name was not disclosed. Snowball pleaded guilty to a charge of uttering a letter threatening to accuse a doctor of the crime of abortion, with intent to extort money, and not guilty to a charge of uttering a threatening letter demanding £300 with menaces without any reasonable or probable cause. The latter count was left on the file of the court. He had written the doctor a letter saying:

> "I am desperately in need of £300, and request that you loan me this amount in exchange for my silence, not only for the present but for ever, and I will repay you every penny, plus 5 per cent. interest, just as surely as I will do otherwise if you don't fall in with my wishes."

He wrote two more letters, and the doctor, after consulting with the police, sent a dummy parcel to an arranged place and the prisoner was arrested when he collected it. He made a statement to the police in which he said that his act was one of madness in a fit of desperation due to debts, and that he did not know the doctor or know anything against him; he expressed deep regret both to the doctor and to society. A police officer who gave evidence said that the prisoner had a very adventurous nature and had travelled a great deal, and that betting was probably the cause of his downfall. The prisoner's counsel said that he had taken the doctor's name and address from a telephone book and that there was no truth in any of the allegations he had made.

Exposure to this kind of danger is one of the incidents of a doctor's profession; the danger was slight in the present case, but in others is by no means negligible. In this case, as in every one of the kind, the name of the doctor was written down for the information of the judge but was not disclosed. A doctor who is subjected to this sort of threat may therefore at once consult the police or his solicitor knowing that the proceedings will not bring his name before the public.

The Services

No. 29 GENERAL HOSPITAL DINNER

The eighteenth annual reunion dinner of No. 29 General Hospital will be held at the Monico Resturant, Piccadilly Circus, W., on Saturday, December 5th, when Lieut.-Colonel S. H. Withers, C.M.G., will preside. Officers who wish to be present are asked to communicate with Captain A. Percy Groves, Heronfield, Meadowcourt Road, Leicester.

DEATHS IN THE SERVICES

Lieutenant-Colonel Ulick Joseph Bourke, R.A.M.C. (ret.), died in London on October 13th, aged 82. He was born in Dublin on October 5th, 1854, was educated in the School of the Royal College of Surgeons, Ireland, and took the L.R.C.S.I. in 1875, and the L.S.A. in 1876, also later the D.P.H. of the Irish Colleges in 1901. He entered the Army as surgeon on February 4th, 1877, became surgeon lieut.-colonel after twenty years' service, and retired on January 7th,

1903. He was for some time in charge of the Royal Herbert Hospital at Woolwich. When on the retired list he was re-employed at Hamilton in 1905. He served in the Sudan campaign of 1885, at Suakin, receiving the medal with a clasp, and the Khedive's bronze star. He was the father of the late Major U. J. Bourke, I.M.S.

Major Philip Adams Opie, R.A.M.C., late of Colston House, Buckfastleigh, and of Woodcocks Wells, Cullompton, Devon, died at Poona, aged 50, on October 5th, of a fall when riding in the Poona and Kirki Hounds races. He was born on January 11th, 1886, and was educated at Cambridge, where he graduated B.A. in 1907, B.Ch. in 1911, and M.B. in 1912. After filling the posts of resident medical officer and house-physician at the Bristol Royal Infirmary, and resident medical officer at the Queen Victoria Memorial Hospital, Nice, when the war began he took a temporary commission as lieutenant in the R.A.M.C. on October 10th, 1914, became temporary captain after a year's service, and on April 10th, 1918, took a permanent commission in the R.A.M.C., becoming major on October 10th, 1926. He served throughout the war of 1914–18. At the time of his death he held the post of surgeon to H.E. the Governor of Bombay.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a congregation held on November 13th the following medical degrees were conferred:

M.D.—*B. P. Harris, Hon. B. W. S. Mackenzie.
M.B., B.Chir.—J. W. D. Bull, J. M. Barnes, G. T. Pitts.
M.B.—J. S. Ross, S. F. L. Dahne.

*By proxy.

UNIVERSITY OF LONDON

Mr. W. Girling Ball, F.R.C.S., has been elected Dean of the Faculty of Medicine for the period 1936–8.

UNIVERSITY OF SHEFFIELD

The University Council has accepted, with regret, the resignation of Dr. J. C. Paisley of the post of junior assistant bacteriologist, and accorded its thanks to Dr. Paisley for his services to the University.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The Buckston Browne Dinner

The ninth annual Buckston Browne dinner of Fellows and Members was held in the library of the College on November 12th, with the President, Sir Cuthbert Wallace, in the chair. The President's informal speech began with a reference to the loss by death of Lord Moynihan: "We remember what he did and what he said, and hold his memory in honour." The past twelve months, Sir Cuthbert said, had been an outstanding year for surgical research, in which the position of the College was pre-eminent. Plans for increasing the laboratory accommodation were maturing, thanks to the Bernhard Baron gift. Acknowledging once again the Buckston Browne benefactions, and expressing the gratitude of the Council to its administrative and scientific staffs, the President ended with a toast to the health of Sir Buckston Browne, which was received with acclamation. In his reply the donor of the feast said that the feeling which gave rise to this dinner still continued. In some interesting reminiscences of his early career at University College Sir Buckston Browne said that failure at the final Fellowship examination crushed, but did not destroy, his spirit. The College at that time took no notice of him, and he did his life-work as a Member, but he had always loved the College. After the war he felt that he would do anything to bring members into fuller recognition. He believed that the College was managed perfectly by the élite of the surgical profession, and that its constitution needed no change. His idea of an annual dinner of Fellows and Members meeting as friends and colleagues in equal numbers had been encouraged by Lord Moynihan and his successors in the presidential chair.

After dinner a number of admirable exhibits and demonstrations arranged by the conservator, Dr. John Beattie, were on view in Museum Room I. Methods of preparation of anatomical and pathological material were shown, together with exhibits from the research laboratories relating to the surgical treatment of cardiac ischaemia, intestinal strangulation, surgical shock, experimental hypertension, and the uretero-vesical sphincter. In the library there was a comprehensive display of syphilis literature, and in the lecture theatre the cancer film prepared by the late Dr. R. G. Canti was shown.

The following is a complete list of those present.

Council.—Sir Cuthbert Wallace (President), Sir Charles Gordon-Watson and Mr. Victor Bonney (Vice-Presidents), Sir Holburt Waring, Professor E. W. Hey Groves (Bristol), Mr. C. H. Fagge, Mr. W. Sampson Handley, Professor G. E. Gask, Mr. A. H. Burgess (Manchester), Professor G. Grey Turner, Mr. Hugh Lett, Mr. R. E. Kelly (Liverpool), Professor Graham Simpson (Sheffield), Sir James Walton, Sir Alfred Webb-Johnson, Mr. G. Gordon-Taylor, Mr. R. C. Elmslie, Mr. L. R. Braithwaite (Leeds), Mr. H. S. Souttar, Mr. W. Girling Ball, Mr. Seymour Barling, Mr. C. Max Page, and Mr. W. H. Ogilvie.

Fellows.—Mr. J. C. Anderson (Sheffield), Mr. George Armitage (Leeds), Sir Robert Armstrong-Jones, Mr. R. St. Leger Brockman (Sheffield), Sir Buckston Browne, Mr. F. J. Cleminson, Mr. Charles Donald, Dr. Wilfrid Edgecombe (Harrogate), Mr. Ernest Finch (Sheffield), Sir Henry Gauvain, Lieut.-Col. W. L. Harnett, Mr. J. P. Hedley, Mr. G. C. Knight, Sir Alexander MacCormick (Jersey), Mr. Terence Millin, Dr. H. W. L. Molesworth (Folkestone), Mr. A. M. A. Moore, Dr. Egbert Morland, Mr. Laurence O'Shaughnessy, Mr. Robin Pilcher, Mr. H. H. Rayner (Manchester), Mr. R. H. O. B. Robinson, Mr. B. T. Rose, Mr. J. C. Stewart, Mr. W. E. Underwood, Mr. Cecil P. G. Wakeley, Mr. K. M. Walker, Mr. A. J. Watson, Mr. Maurice Whiting, Dr. J. Williamson (Cleethorpes), Mr. Ralph Winterton, and Mr. Dickson Wright.

Members.—Mr. F. M. Allchin, Dr. J. Kingston Barton, Dr. C. Luther Batteson (Watford), Surgeon Rear-Admiral C. M. Beadnell, Dr. T. Izod Bennett, Dr. Mewburn Brown (Birkdale), Dr. R. H. Browne-Carthew, Dr. H. A. Burt (Bath), Dr. W. Byam, Mr. Granville Chapman (Grimsby), Dr. H. B. Corry (Liss), Dr. H. Guy Dain (Birmingham), Dr. B. Dale (Birmingham), Mr. H. P. Daly (Birmingham), Mr. E. Gordon Dingley (Leamington), Dr. A. J. Gibson (Brentwood), Dr. F. J. S. Hall (Walmer), Dr. J. Walker Hirst (Huddersfield), Dr. John Holmes (Southport), Dr. A. W. Holthusen (Westcliff), Dr. N. G. Horner, Dr. Graydon Hume, Mr. A. E. Williams Idris, Dr. R. W. Ironside, Mr. Davenport Jones, Dr. G. D. Kersley (Bath), Dr. F. Desmond MacCarthy, Dr. J. V. Macgregor, Sir Arthur MacNalty (Ministry of Health), Dr. Robert McQueen, Dr. H. L. Marriott, Dr. W. D. Maycock, Dr. Charles Miller, Mr. J. C. Mottram, Dr. J. W. Nunn (Hadley), Dr. Bernard Potter, Mr. L. W. Proger (Pathological Curator), Dr. R. W. Reynell, Dr. G. H. Rossdale, Dr. Harold H. Sanguinetti, Dr. Eric A. Scott, Sir James Purves-Stewart, Dr. Dudley Stone, Mr. Maxwell H. Summers, Dr. J. H. Sykes (Birkdale), Dr. J. H. Thursfield, Dr. O. R. Tisdall (Harrow), Mr. A. Toulmin (Preston), Dr. R. F. Tredgold, Dr. H. E. Watkins (Newton-le-Willows), Dr. J. R. Whait, Dr. F. Harris White (Port of London Authority), and Mr. E. T. Willans (Stockton-on-Tees).

Others Present.—Professor H. H. Woollard, Professor A. K. Henry, Mr. Horace H. Rew (Director of Examinations), Dr. John Beattie (Conservator of the Museum), Mr. Kennedy Cassels (Secretary), Mr. A. J. E. Cave (Assistant Conservator), Mr. David Slome, Dr. R. J. Kellar, and Mr. W. F. Davis.

Council Meeting

An ordinary meeting of the Council was held on November 12th, with the President, Sir Cuthbert Wallace, in the chair.

It was reported that arrangements had been made for the laboratories of the Imperial Cancer Research Fund to be removed from Queen Square to Mill Hill. The President reported by Mr. G. M. Hills of Middlesex Hospital had been awarded a Mackenzie Mackinnon Research Fellowship. The President reported that the Hunterian Trustees had authorized the closing of the museum for a period in connexion with the reconstruction of the research laboratories. Permission was granted to the Society of British Neurological Surgeons to hold its next meeting in London at the College in January.

A diploma of Fellowship was granted to Russell Kneale Magee of Toronto University and St. Bartholomew's Hospital.

Diplomas of Membership were granted to R. W. Dunn and to the 143 candidates whose names were published in our issue of November 7th (p. 953) in the report of the proceedings of the comitia of the Royal College of Physicians of London, as were the names of the eleven candidates to whom the Diploma in Public Health has been granted, and the names of the seventeen candidates who have received the Diploma in Child Health.

CONJOINT BOARD IN SCOTLAND

The following candidates have been approved at the examination indicated:

Diploma of L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P. and S.Glas.—V. Bellafiore, W. H. Berkman, G. H. Berry, L. L. Bernstein, N. Binder, J. Boyes, A. Dreifuss, H. Einhorn, D. Fabian, Minnie Faine, A. Forgacs, L. Fred, M. Freed, I. I. Fuchs, B. Gilbowski, G. N. Girgis, I. Gitzelter, A. Goldberg, H. I. Goldberg, K. G. O. Gordon, J. D. Gow, W. Gurewitsch, R. R. Hair, D. Hardy, N. H. Hass, M. L. Herman, G. Jeremiah, H. Kane, M. L. Kenig, W. P. Kelly, W. King, D. P. Lewis-Badgett, Hilma C. C. M. Ljungfaldt, M. Mamula, D. N. Markley, D. A. Martin, W. Mears, M. Lewisman, M. Michel, J. Pomeranze, S. M. Pribram, M. M. Ramadan, N. Reiter, H. Rosenfeld, C. Rummelsburg, H. Samuels, J. Sang, H. Schaefer, D. Schreiber, P. B. B. Senewaratne, R. L. Siegel, A. M. L. Smith, A. F. Snyder, Orpha M. Speicher, H. Ucko, H. Warren, M. B. D. Welland, B. Wiesenfeld, S. H. Wharton, H. H. Winterstein-Gillespie, R. Xaba, C. H. Yeo.

Medical News

Mr. Julian Huxley, D.Sc., secretary of the Zoological Society of London, will deliver the Lloyd Roberts Lecture at the Manchester Royal Infirmary on Friday, November 27th, at 4.15 p.m. His subject is "The Uniqueness of Man."

The old students' dinner of the London (Royal Free Hospital) School of Medicine for Women will be held at the Savoy Hotel on Thursday, December 3rd, at 7 for 7.30 p.m.

Under the auspices of the Leeds Division of the British Medical Association Dr. J. Forestier of Aix will deliver a lecture on "Rheumatoid Arthritis and its Treatment with Gold Salts: A Review of Eight Years' Experience," at the Arthritis Clinic of the Leeds Public Dispensary and Hospital, on Tuesday, December 1st, at 8.30 p.m.

The next quarterly meeting of the Royal Medico-Psychological Association will be held at 11, Chandos Street, W., on Wednesday, November 25th, at 2 p.m., under the presidency of Dr. M. Abdy Collins. At 3 p.m. the seventeenth Maudsley Lecture will be delivered in the Barnes Hall of the Royal Society of Medicine by Sir Walter Langdon-Brown. His subject is "The Biology of Social Life."

A meeting of the Kensington Medical Society will be held at St. Mary Abbots Hospital, Marloes Road, W., on Tuesday, November 24th, at 9 p.m., when Dr. G. Roche Lynch will give addresses on "Toxicology of the Barbiturates" and "Recent Work in the Investigation of Cases of Disputed Paternity."

Under the auspices of the North-Eastern Association of Medical Women, Miss Ida Mann, D.Sc., F.R.C.S., will deliver a lecture on "Some Recent Advances in Ophthalmology," at the Royal Victoria Infirmary, Newcastle-upon-Tyne, on Thursday, November 26th, at 8.15 p.m. A general discussion will follow the lecture, and all medical practitioners are invited to attend.

A meeting of the Fever Hospital Medical Service Group of the Society of Medical Officers of Health will be held at 1, Thornhaugh Street, Russell Square, W.C., on Friday, November 27th, at 4.15 p.m., when Dr. D. Sage Sutherland will open a discussion on "Certain Aspects of Administration in Connexion with Small Fever Hospitals."

A meeting of the Medical Section of the British Psychological Society will be held at the Royal Society of Medicine, 1, Wimpole Street, W., on Wednesday, November 25th, at 8.30 p.m., when a paper on "Some Clinical Observations on Schizophrenic Drawings" will be read by Dr. E. Guttmann (in collaboration with Dr. W. S. Maclay).

Thursday, November 26th, is the centenary of the death of John Loudon McAdam, the great roadmaker. At 5.30 p.m. in the Hastings Hall, B.M.A. House, an illustrated address will be given on his life and work by a great-great-grandson, Mr. W. McAdam Eccles, M.S., F.R.C.S. The chair will be taken by Sir Courtauld Thomson, K.B.E., C.B. In the Pillar Hall, from 3 p.m., there will be an exhibition of "relics, etc." No tickets of admission are required.

The 1936–7 session of the North London Medical and Chirurgical Society opened on October 15th with an address by Sir Lancelot Barrington-Ward. Other meetings have been arranged as follows. December 16th, Dr. R. R. Trail, "Chest Diseases in Children." January 14th (in conjunction with the City Division of the British Medical Association), Dr. F. W. Price, "Observations on Diagnosis and Treatment in Heart Disease, including a Reference to Child-bearing." February 12th, visit to Colindale Hospital for Tuberculosis, Hendon. March 17th, Judge Earengey, "The Doctor in the Witness-box." May 13th, president's evening and address by Dr. S. A. Kinnier Wilson. All the meetings are held at the Royal Northern Hospital, Holloway Road, N., at 9.15 p.m., except the visit to Colindale Hospital, which is at 4 p.m.

A course of lectures on "Chemical Messengers of the Body in Health and Disease" will be delivered by Dr. Edward Mellanby, F.R.S., at the Royal Institution, 21, Albemarle Street, W., on Tuesdays, December 1st, 8th, and 15th, at 5.15 p.m.

The Cambridge University Press announces for early publication *Accidents and their Prevention*, by Dr. H. M. Vernon, which discusses death and injury happening to people on road and railway, in mine and factory, and in the home.

A meeting was held on November 4th at the Faculty of Medicine, Paris, under the chairmanship of Professor Tanon, with the object of discussing the preparation for the series of international discussions on various public health problems to be organized in connexion with the Paris Exhibition. The provisional dates fixed for these Journées Internationales de la Santé Publique are July 1st to 10th, 1937.

At the Finsen Institute in Copenhagen tests have recently been carried out by Dr. P. Windfeld with various stains with the object of finding one suitable for marking skin before an operation. A stain not washed away by alcohol or hidden by iodine was found in a saturated 4.5 per cent. solution of potassium permanganate, which does not burn, and which disappears in two or three days.

The following medical men were elected mayors on November 9th, and consequently will hold office during the Coronation celebrations next May: Dr. L. G. Glover (Hampstead); Dr. O. Wynne Griffith (Pwllheli); Sir Richard Luce (Romsey); Dr. T. Clyde McKenzie (Smethwick); Dr. William Shipton (Buxton); Dr. J. S. Soutter (Hedon); and Dr. H. Wood-Hill (Beccles). Dr. Griffith, Sir Richard Luce, and Dr. Wood-Hill were all re-elected. Dr. Griffith occupied the mayoral chair at Pwllheli when King Edward VII and King George V were crowned in 1902 and 1911 respectively, and during 1911 he was president of the North Wales Branch of the British Medical Association.

At Port Regis Preparatory School two scholarships of £100 each are annually awarded to the sons of medical men. The school is at Broadstairs, Kent, and the scholarships were recently founded by Sir Milsom Rees. The next examination will be held on March 5th, 1937. Candidates must be under 9 years of age at the time of competing, and the scholarships are normally tenable till the holder leaves the school. The holders will be selected at an interview in London from among those boys who have done best in some simple examination conducted in or near their homes. Applications must be addressed to the Head Master, Port Regis School, Broadstairs, from whom full particulars may be obtained. The applications must be made not later than February 20th.

The address of the Home Office Air Raid Precautions Department (including the Supply Branch) is now Horseferry House, Thorney Street, London, S.W.1. Telephone, Whitehall 8100.

Professor Achard, member of the Institut de France and general secretary of the Académie de Médecine, has been entrusted with a mission to Western French Africa to study the sanitary reorganization of the colony.

Professor Dr. W. Stoeckel of Berlin has now completed twenty-five years as editor of the *Zentralblatt es für Gynäkologie*, published by Johann Ambrosius Barth of Leipzig.

In 1933 94,812 persons died of malignant diseases in Germany, or 4,000 more than were notified in 1931. In 34,129 cases the stomach was affected.

Dr. J. Lacomble has been appointed Minister of Public Health in Belgium.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

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The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin).

QUERIES AND ANSWERS

A Literary Inquiry

Dr. T. JOHNSTON (Enfield, Middlesex) writes: Can any of your readers tell me if the poem named "Genesis Chap. 1 in the Bible of the Future" was written by the late Dr. Arthur Giles? He claimed to have come across the work while a student at Edinburgh, but this may have been his modesty, though no copy was found among his other verse.

> "And [man] developed a thumb
> For that he had need of it"

are two lines from this Darwinian poem, of which I am anxious to obtain a copy.

Ownership of a Medal

Dr. NORMAN S. KLASS (Trinity Lodge, Beaufort West, Cape, S. Africa) wishes to trace the owner of a large bronze medal picked up on a farm in his county. The medal was presented to L. J. Newnham by Charing Cross Hospital for proficiency in medicine in 1872. It is now in the possession of the head master of the local public school, who is anxious to have it restored to the rightful owner or his relations. The only information at Charing Cross Hospital Medical School is a minute-book entry recording the award of this medal.

Income Tax

Appointment—Payment for Residence

"K." holds a contract appointment under a medical aid society; he is required, as a condition of his employment, to reside on premises owned by the society, and the rent payable therefor is deducted by the society when paying his salary. He claims to be assessed on the net amount actually received by him.

*** His claim is not supportable. A similar claim was made by an assistant medical officer employed by a county council, and decided against him in the High Court (Osborn *v.* Sawyer). "K." is assessable on the gross amount of his salary, notwithstanding he has to pay part of it by deduction for his residence. The result would be different if his agreement provided for the net salary plus a right to use—but not to sublet—the premises.

New Partnership

"M. N." has just taken a partner into his practice and inquires whether he should exercise the option of having the practice regarded as having ceased and recommenced. Is he bound to produce the deed of partnership for examination?

*** It does not usually pay to exercise the option unless the income of the practice is falling off or the expenses are increasing to a greater extent than the gross income. If the entry of the new partner is accompanied by the cessation of a paid assistant the option should not be exercised, because on the basis of the previous year the assistant's emoluments will still affect the assessment though they will no longer be paid. The production of the deed is a reasonable requirement, because its terms settle the basis on which the assessment is divisible between the partners. If not produced to the inspector of taxes it can be demanded by the Commissioners on appeal.

LETTERS, NOTES, ETC.

Presentation to Mr. Peter Duncan, Liverpool

Professor HENRY COHEN, chairman of the Faculty of Medicine, and Dr. W. H. WOOD, dean of the Faculty of Medicine, University of Liverpool, write: Mr. Peter Duncan, chief laboratory assistant in the Medical School of the University of Liverpool, attains the age of 73 this month, and will be retiring in December, 1936, after forty-three years' service. It is the intention of the Faculty of Medicine to make him a presentation in the form of a cheque on his retirement at Christmas. It was thought that past members of the staff and old students of the medical school might wish to contribute to the presentation. It has been decided that donations shall be limited to one guinea. Any former member of the staff or old student desiring to contribute should forward the amount to the Faculty of Medicine, c.o. the dean, not later than December 16th.

Combined Auscultation and Percussion

Dr. A. A. COCKAYNE (Christchurch, Hants) writes: The following method, not perhaps known to some readers, should prove useful to those who, like myself, lack an ear sufficiently acute to get much out of percussion of the chest. Place the stethoscope on the part of the chest to be tested and flick near it with the back of the index finger-nail, using the ball of the thumb as trigger. The stethoscope, being moved by the other hand as requisite, magnifies the sound of the light percussion by the back of the finger-nail enough to make out quite fine details; one can be quite certain of fluid or a dull patch, and even make out the borders of the lobes. Another method is to place the stethoscope on the back of the chest, and by tapping lightly with the tip of the fingers on the front, make out defects in the elasticity of the intervening lung common for a time after bronchitis or whooping-cough. It would also seem to be possible, by placing the stethoscope over the stomach or large intestine and moving the percussing finger about, to determine the dilatation of either in suitable cases, and I fancy it might be possible by listening over the heart to get percussion conducted along the great blood vessels in cases of aneurysm.

Divorce for Insanity

Dr. S. E. WHITE (Manor Park, E.12) writes: The Divorce Bill is being reintroduced into Parliament. There is one clause in it on which there is a crucial difference of opinion—that is, the clause dealing with divorce for "incurable" insanity. There are few doctors who would venture the pronouncement that a certain case of trouble of the mind is incurable; it depends to an immense extent on its environment and on the treatment (which varies in every mental hospital) to which the patient is subjected. The very fact of restraint—which in many instances can be shown to be an unnecessary imposition—is a potent deterrent to recovery. Therefore to fix a time-limit is indefensible. Moreover, the haunting dread of the contingency of divorce has a terribly injurious effect upon the patient. In the case of insanity no misdemeanour is alleged against the patient and there is the possibility that the spouse who wishes to divorce may, by his or her behaviour, have contributed to the onset of the malady.

Corrigendum

Dr. C. L. COPE wishes to correct a slip in his article on alkali poisoning in the *Journal* of November 7th. The word "acidosis" on page 916, column two, line 27, should of course have been "alkalosis."

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 52, 53, 54, 55, 56, 57, 58, and 59 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 60 and 61.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 283.